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SURVEY ON ANIMAL WELFARE AND PROTECTION DURING TRANSPORT IN NORTHERN ITALY

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KEY WORDS: animal transport, welfare, regulations, survey, Italy

ABSTRACT

The issue of humane treatment of food animals has received increased attention worldwide in the last years. Evidence suggests that animal stressing may damage meat quality, and lead to more contamination and cross-contamination with pathogens as it may lead to increased microorganisms shedding. The welfare and health of animals can be substantially affected by transport. The loading and unloading represent a source of stress for animals and the conditions of live animals during transport affect carcass and meat quality traits. The EU legislation on animal welfare during transport has been widely modified in the last three decades to improve the protection of animals during transport. The last EU provision is the Council Regulation (EC) n. 1/2005, adopted since 5th January 2007. The Regulation identifies the chain of all those involved in animal transport and related operations and introduces obligations regarding animal welfare extended to any operator concerned with the transport. The Regulation introduces new and more efficient monitoring tools and much stricter rules for long journeys, including a substantial upgrading of vehicle standards. The aim of this study was to assess the enforcement of the Council Regulation (EC) n. 1/2005 in Northern Italy. The research has been carried out by a survey involving 364 animal trucking enterprises, located in the Emilia Romagna region, which were asked to answer a specific questionnaire drawn up for this study. The results show that the animal trucking enterprises comply in good measure with the new European animal welfare Regulation. Road vehicles for long journeys are equipped with adequate ventilation and temperature monitoring and recording systems, connections to water supply during stops, partitions to separate compartments. Systems such as spraying for hydrating pigs are occasionally missing, in particular in small enterprises. The provisions for loading density are always observed whereas loading and unloading operations last too long. The participation to training courses appears very limited or lacking.

RIASSUNTO

Uno degli aspetti di maggiore interesse nella normativa comunitaria in tema di trasporto degli animali riguarda la loro protezione. Durante il trasporto, soprattutto

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su strada, gli animali sono sottoposti ad innumerevoli fattori stressanti che vengono riconosciuti come cause del calo del loro benessere e della loro salute. Tali fattori possono provocare, in alcuni casi, morte degli animali e possono indurre effetti negativi sulla qualità della carcassa e delle carni. Il presente studio aveva lo scopo di valutare le condizioni attuali in materia di trasporto degli animali alla luce della recente entrata in vigore del Regolamento (CE) n. 1/2005 sulla protezione degli animali durante il trasporto e le operazioni correlate. Lo studio è stato svolto attraverso una indagine condotta presso aziende di autotrasporto animale, situate principalmente nel territorio modenese. L'elaborazione statistica dei dati ottenuti dall'indagine ha permesso di verificare in quale misura il settore trasporti si è adeguato alle disposizioni in materia.

INTRODUCTION

The transport of cattle, pigs, sheep and goats occurs on a large scale between European and non European countries. The number of transported livestock in the EU countries is not exactly known. It is estimated that at least 25 million cattle, 7 million calves, 171 million pigs, 75 million sheep and lambs and 9 million goats are transported per year within the EU (1).

During road transport livestock animals are exposed to a variety of potential stressors. Stress is defined as a condition in an animal resulting from the action of one or more stressors that may be of either external or internal origin. Whether a stressor can be considered harmful depends on the way an organism is able to cope with a threatening situation as it regains a state of homeostasis. The current biological view is that severe stress invariably implies poor well-being. However, stress itself may not negatively affect well-being, and the well-being of an individual might be impaired even when signs of stress are not immediately visible. The adjustment to stress induces a broad range of physiological and behavioural changes that allow a rapid adaptation to the change. If such adaptation does not occur and the stressors persist, the physiological changes in the animal might lead to a pathological state in the long run and have deleterious effects on health, well-being, performances and, ultimately, product quality (2).

Direct handling, constraint and novel housing environment during transport are short stressful events for animals (3). In particular, the motion of the lorry, noise, vibration, quickly changing light, temperature and humidity conditions, poor air quality, shortage or lack of water and feed are grouped as physical stressors and are recognised as the reasons of reduced welfare and health of the animals which can decrease product quality and may even cause death. Stress can be measured and monitored in terms of behavioural and physiological alterations that may be indicative for the individual's state of well-being following the transport (4).

For the reasons previously mentioned, any operator involved in the transport, the means of transport and transport practices play a pivotal role in the animal welfare and protection during transport. Tarrant and Grandin (5) reported that 80% of the losses of balance of animals on the means of transport are due to sharp braking and too rapid change of speed. Moreover, the microclimate inside animal transport

road vehicles is a critical factor in the transport practices. Temperature, humidity, air velocity and gas levels are the most relevant elements contributing to the microclimate inside the mean of transport. The Scientific Committee on Animal Health and Animal Welfare of European Commission has published a report on the standards for microclimate inside animal transport vehicles for road journeys of more than eight hours for the bovine, porcine, ovine and caprine species (available at http://ec.europa.eu/food/fs/sc/scah/out35_en.pdf).

Contradictory results have been shown on the effect of the lairage on animal welfare. The effect of lairage duration depends on factors such as environmental temperature and conditions. A lairage time of less than one hour does not allow for sufficient resting and may negatively impact animal welfare and pork quality (6); the slaughtering just after the unloading seems detrimental on bullock and pig carcass quality (7, 8). However, lairage time of six hours and more may increase carcass damage and stress caused by fighting and prolonged periods without feed (9).

In any case, it is widely accepted that the training for any person handling animals, suitable vehicle equipments and good transport practices as well as research activities focused on the protection of animals from breeding to slaughtering, should be the way to improve animal welfare and to assure the quality of meat products (3).

In the last decades the legislation in force on animal welfare during transport has been modified and widened as such aspects have been considered. The "European Convention for the protection of animals during international transport" (CETS n. 065), signed in Paris in 1968 and in force since 20th February 1971, established the first provisions on animal welfare. From then on, the legislation on this matter evolved to improve the conditions of animal transport both for ethical and commercial reasons. The Council Directive 95/29/CE of 29th June 1995 concerning the protection of animals during transport (10) (accepted in Italy as Legislative Decree of Italian Republic n. 388/98 (11)), is one of the regulations now in force. In 2000 a report from the Commission to the Council and European Parliament on the experience acquired by Member States since the implementation of Council Directive 95/29/CE has been draft based on three sources of information: Member State inspection reports, Food and Veterinary Office inspection reports and complaints from non governmental organisations (available at http://ec.europa.eu/food/animal/welfare/transport/report_it.pdf). According to this report the main findings were as follows: inadequate road vehicles; insufficient ventilation on road vehicles, illegal route plans and non-compliance with travelling time limits, negligence and poor handling of animals, overloading, transport of unfit animals, difficulties in checking the approval of transporters for animal transport. Arising from these findings, the Commission concluded that technical amendments to the Directive were necessary and in particular in relation to route plan, definition of animals unfit for transport, health certificates, ventilation standards for road vehicles and Member State inspection reports. These remedial actions have been implemented in the Council Regulation (CE) n. 1/2005 of 22nd December 2004 on the protection of animals during transport and related operations which is in force since 5th January 2007 (12).

This Regulation is an important reform of the legislation in the subject of

animal transport in Europe. In particular, some obligations regarding the welfare of animals have been extended to any operator involved in the transport of animals that is transporters as well as other categories of operators such as farmers, traders, assembly centres and slaughterhouses (the "keeper"). Moreover, the Regulation has established new tools, such as navigation systems, for appropriate checks on a random or targeted basis by the competent authority, and more severe measures for journeys that exceed 8 hours (long journeys).

The aim of this study was to evaluate the current conditions of animal transport in the light of the recent coming into force of the Council Regulation (CE) n. 1/2005 on the protection of animals during transport and related operations (12). This study has been carried out by a survey among the animal trucking enterprises of Northern Italy.

MATERIALS AND METHODS

Survey

The enterprises of farm animal transport located in the Northern Italy were considered; in particular, the enterprises of Modena province, in Emilia Romagna region, were contemplated.

A list of enterprises having animal transport sanitary approval was provided by Local Health Units and led to the discovery of 364 business names. The term "enterprise" has to be intended in the widest meaning because the list included firms of different style (natural person, one-man business, business with employees, company, cooperative society, transporters association), all of them holder of animal transport sanitary approval.

Every enterprise out of 364 was contacted by phone to be informed and invited to participate to the study. Most of them denied their availability as a participant; however, a small number of enterprises (42) enthusiastically attended to this research. The 42 participants provided to fill a questionnaire designed on purpose for this investigation.

Questionnaire

The questionnaire included 42 questions grouped in 5 different sections: identification of the enterprise, characteristics of the enterprise, transporters, means of transport, transport practices.

Statistical analysis

Descriptive statistics were obtained by using SPSS software, ver. 11.5.1. (SPSS Inc, Chicago, Illinois). Raw data produced from questionnaires to animal transport enterprises were coded in observations and variables. The observations corresponded to the enterprises interviewed; the variables corresponded to the whole of the given answers. The variables were distinguished in continuous and nominal. Average, median, standard deviation, minimum and maximum were calculated on continuous variables whereas frequency and percent of frequency were calculated on nominal variables.

RESULTS

The typology of participating enterprises was quite heterogeneous: they ranged from stock farmers and animal traders, carrying out a limited number of transports per year, to animal trucking enterprises, performing daily transports. However, on the whole the enterprises were quite small, often one-man business or family enterprises. The number of employees was between 1 and 5 in 92.9% of the cases, between 6 and 10 in 4.8% of the cases and more than 10 in the remaining 2.3% of the cases. The number of animal transport road vehicles was also limited: 95.2% of the trucking enterprises had from 1 to 5 vehicles and only 2.4% of them had from 6 to 10.

Two main types of animal trucking enterprise were clearly observed: the first working exclusively within the national territory and the second one working at international level, both European and extra EU; 45.2% of the enterprises performed animal transports only in Italy whereas the remaining 54.8% only between Italy and Member States or third countries. Based on the distance in kilometres of the performed journeys, four classes of enterprises were identified. 38% of the enterprises carried out very long journeys (more than 1000km); 17% long journeys (between 200 and 1000km); 26% middle journeys (between 50 and 200km) and 19% short journeys (lower than 50km) (Figure 1). The enterprises belonging to the first two classes worked at international level whereas those belonging to the other two classes were enterprises operating only within national territory.

The different distance in kilometres of the journey affected the transport route: 64% of the journeys was made by motorway whereas the remaining 36% by national or provincial roads (Figure 2). Based on the collected data, the animal transports were performed during the whole of the year. Concerning the transported animal species, 85.7% of the enterprises was dedicated to cattle and swine transport, 7.1% to horse transport, 4.8% to bird and rabbit transport and the remaining 2.4% to sheep and goat transport.

The majority of the interviewed (66.7%) stated they did not follow training courses on animal welfare and propaedeutic to animal transport approval. The remaining 33.3% attended training courses organised by local health authority or trade associations (Figure 3). All the interviewed declared to be qualified to handle animals in case of emergency.

Concerning animal transport road vehicles, 54.8% of them was equipped with temperature monitoring and recording systems. The ventilation was natural or forced in respectively 26.2% and 2.4% of the vehicles; however, most of the road vehicles (71.4%) was equipped with both ventilation systems (Figure 4). These data show that the majority of the vehicles comply with the additional provisions for long journeys established by Annex I, Chapter VI, article 3.1 and 3.2 of the Council Regulation (CE) n. 1/2005 (12) which provide that ventilation systems may be designed, constructed and maintained in such way that, at any time during the journey, whether the mean of transport is stationary or moving, they are capable of maintaining a range of temperature from 5 to 30°C and must be capable of ensuring even distribution of air and of operating for at least 4 hours, independently of the vehicle engine.

Plastic or plywood insulation systems, able to protect against extreme temperatures, were present in 66.7% of the animal transport road vehicles. Half of the vehicles was equipped with devices allowing the connection to water during stops and 54.8% with watering devices appropriately designed and positioned for the categories of animals to be watered on board the vehicle.

Most of the road vehicles (83%) for swine transport had not hydration systems like water nebulization devices. Appropriate bedding was present in 83.3% of road vehicles. The ramps for loading and unloading were made on steel or aluminium and the surfaces were designed to be not slippery; the road vehicles for horse transport had ramps made on rubber or, in one case, on plastic reinforced by incorporated fibreglass.

92.2% of the vehicles was constructed as to provide access to the animals to allow them to be inspected and cared for, according to Annex I, Chapter II, article 1.1, letter f of the Council Regulation (CE) n. 1/2005 (12).

All the road vehicles more than 7.5 tons total weight were equipped with crono-tachograph, as fixed by law, and half of them of Global Positioning System (GPS). According to Annex I, Chapter VI, article 4.1 of the Council Regulation (CE) n. 1/2005 (12), the means of transport by road must be equipped, as from 1st January 2007 for means of transport for the first time in service and as from 1st January 2009 onwards for all means of transport, with Navigation System allowing for recording and providing information equivalent to those mentioned in the journey log and information concerning opening/closing of the loading flap.

Concerning transport practices, 97.6% of the interviewed stated to respect the maximum loading density provided during animal transport. Severe inconvenience and irritation were expressed by the transporters of animals in relation to unloading times at the slaughterhouses: 64.3% of the transporters stated that animal unloading last more than 120 minutes and in that period of time the animals are forced to stop inside the vehicles.

DISCUSSION AND CONCLUSIONS

The cattle breeding, mainly bovine and swine, and a large number of slaughterhouses and meat processing plants are the main characteristics of the Padana plain in Northern Italy, a traditionally agricultural area. This is the reason why the research has been focused on the enterprises of farm animal transport located in the Northern Italy.

The most important results of this investigation are related to two main aspects: the training and the adaptation of the means of transport.

Poor welfare is often due to lack of education. The improvement of the training of any person handling animals during loading/unloading and transport has been repeatedly recognised as a need to guarantee a high level of animal welfare (13). This need was confirmed by this study because the participation of transporters to training courses resulted very limited or completely lacking. The lack of qualification in animal handling during transport involves ethical, economical as well as hygienic aspects: insufficient cleaning and disinfection procedures of the means of transport can

negatively affect public health due to the spreading of pathogenic microorganisms.

Technical provisions for the means of transport laid down by the Council Regulation (CE) n. 1/2005 (12) are widely satisfied. A high percentage of animal transport road vehicles was equipped with temperature monitoring and recording systems, natural and forced ventilation appliances, devices allowing the connection to water during stops and watering devices appropriately designed and positioned for the categories of animals to be watered on board the vehicle, adequate bedding, free access to the animals to allow them to be inspected and cared for and appropriate navigation system like Global Positioning System (GPS). However, the lack of insulation systems and hydration devices for swine transport road vehicles are two deficient technical aspects.

This study allowed the collection of data related to animal transport as well as the gathering of experiences and evidences of animal transporters. The major complaints of animal trucking enterprises concerned the inadequacy of many roads and motorways which are not suitably equipped in the case of forced stop like accident, traffic jam, obstruction. Moreover, this induces to overrun the time driving. According to animal transporters the unloading operations in the slaughterhouses or in the place of destination last much more than 2 hours with evident consequences on animal welfare. Moreover, the staging points that may be used for long journey are insufficient, not practical, difficult to find and not appropriate from the hygienic point of view.

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Figure 1. Percent distribution of animal trucking enterprises based on type of journey: very long (> 1000 km), long (200-1000 km), middle (50-200 km) and short (< 50 km) journeys.

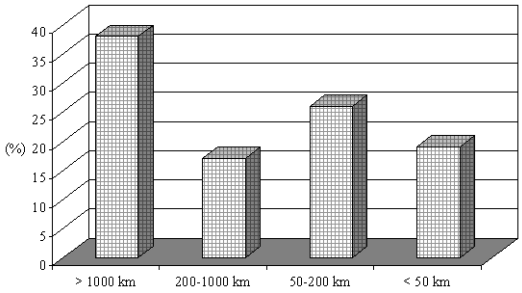


Figure 2. Percent distribution of animal trucking enterprises based on type of road route.

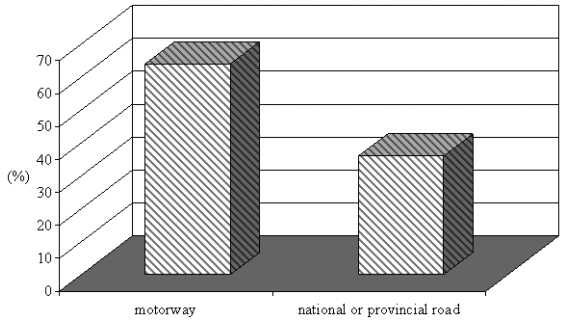


Figure 3. Percent distribution of transporters based on their participation to training courses.

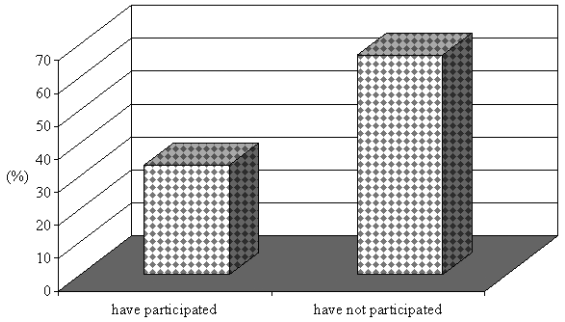
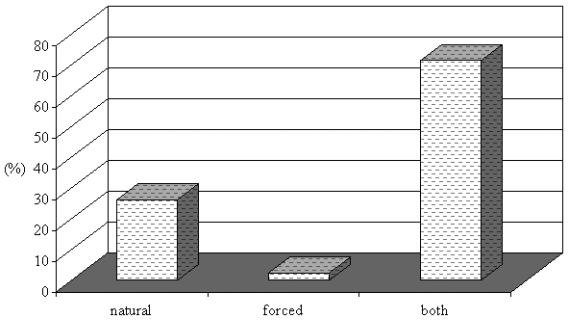


Figure 4. Percent distribution of animal transport road vehicles based on their ventilation system.



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