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PERCEPTION OF HORSE STABLE MANAGERS ON THE NECESSITY AND RELEVANCE OF PHYSICAL IDENTIFICATION METHODS

PERCEPÇÃO DE GESTORES DE ESTÁBULOS DE EQUINOS SOBRE A NECESSIDADE E A RELEVÂNCIA DOS MÉTODOS DE IDENTIFICAÇÃO FÍSICA

PERCEPCIÓN DE LOS GESTORES DE ESTABLOS EQUINOS SOBRE LA NECESIDAD Y LA RELEVANCIA DE LOS MÉTODOS DE IDENTIFICACIÓN FÍSICA

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ABSTRACT

Humans and horses have had a relationship dating back thousands of years, since the domestication of these animals, with various applications in many human activities, such as warfare, hunting, sports, public safety, pharmaceuticals and therapeutics. In this context, this article is the result of a survey of 382 professionals who work with horses in Brazil, with the aim of assessing their position on the use of physical marking methods and their opinion on possible technological tools that could replace these aggressive options. The professionals who had access to this survey work in various sectors of Brazilian equestrian culture, such as administrators, riders, therapists, veterinarians, zootechnicians, and agricultural technicians. Respondents work at equestrian centres, higher education institutions, Equine-Assisted Activity and Therapy Centres (TAAE), in the Brazilian Army (Law and Order Operations - GLO, military facility guard, development of emotional skills and escorting dignitaries), Military Police (Public Security, Operations to Restore and Guarantee Order - RMOP and Equine-Assisted Therapies) and Immunobiological Production Centres (production of antivenom and lexocelic serum). The survey was organised in the form of a questionnaire with 28 multiple-choice questions on the online survey platform Question Pro and was sent by email, QR Code and social media (Facebook and Instagram), reaching 24 of the 26 states of Brazil and the Federal District. The results showed that there is a predominantly receptive climate among professionals regarding the use of less aggressive options for equine identification, replacing igneous and cryogenic methods, a stance that has developed as the importance of equine welfare has matured, both in the economic sphere and, above all, in the deontological sphere.

Keywords: Animal Welfare. Horse. Public Safety.

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RESUMO
Humanos e cavalos mantêm uma relação que remonta a milhares de anos, desde a domesticação desses animais, com diversas aplicações em inúmeras atividades humanas, como guerra, caça, esportes, segurança pública, indústria farmacêutica e terapêutica. Nesse contexto, este artigo é resultado de uma pesquisa realizada com 382 profissionais que atuam com equinos no Brasil, com o objetivo de avaliar sua posição quanto ao uso de métodos de marcação física e sua opinião sobre possíveis ferramentas tecnológicas que possam substituir essas opções agressivas. Os profissionais que participaram da pesquisa atuam em diversos setores da cultura equestre brasileira, como administradores, cavaleiros, terapeutas, médicos-veterinários, zootecnistas e técnicos agrícolas. Os respondentes trabalham em centros equestres, instituições de ensino superior, Centros de Atividades e Terapias Assistidas por Equinos (TAAE), no Exército Brasileiro (operações de Garantia da Lei e da Ordem – GLO, guarda de instalações militares, desenvolvimento de habilidades emocionais e escolta de dignitários), na Polícia Militar (Segurança Pública, Operações de Restauração e Garantia da Ordem – RMOP e terapias assistidas por equinos) e em Centros de Produção de Imunobiológicos (produção de soros antiofídicos e soro antiloxoscélico). A pesquisa foi organizada na forma de um questionário com 28 questões de múltipla escolha, na plataforma de pesquisa on-line Question Pro, e foi divulgada por e-mail, QR Code e redes sociais (Facebook e Instagram), alcançando 24 dos 26 estados brasileiros e o Distrito Federal. Os resultados demonstraram que há um clima predominantemente receptivo entre os profissionais quanto ao uso de opções menos agressivas para a identificação equina, em substituição aos métodos ígneos e criogênicos, posicionamento que se desenvolveu à medida que a importância do bem-estar equino amadureceu, tanto na esfera econômica quanto, sobretudo, na esfera deontológica.

Palavras-chave: Bem-estar Animal. Cavalo. Segurança Pública.

RESUMEN
Los seres humanos y los caballos mantienen una relación que se remonta a miles de años, desde la domesticación de estos animales, con diversas aplicaciones en múltiples actividades humanas, como la guerra, la caza, el deporte, la seguridad pública, la industria farmacéutica y la terapéutica. En este contexto, el presente artículo es el resultado de una encuesta realizada a 382 profesionales que trabajan con equinos en Brasil, con el objetivo de evaluar su postura respecto al uso de métodos de marcación física y su opinión sobre posibles herramientas tecnológicas que puedan sustituir estas opciones agresivas. Los profesionales que participaron en la encuesta actúan en diversos sectores de la cultura ecuestre brasileña, como administradores, jinetes, terapeutas, médicos veterinarios, zootecnistas y técnicos agrícolas. Los encuestados trabajan en centros ecuestres, instituciones de educación superior, Centros de Actividades y Terapias Asistidas por Equinos (TAAE), en el Ejército Brasileño (operaciones de Garantía de la Ley y del Orden – GLO, custodia de instalaciones militares, desarrollo de habilidades emocionales y escolta de dignatarios), en la Policía Militar (Seguridad Pública, Operaciones de Restauración y Garantía del Orden – RMOP y terapias asistidas por equinos) y en Centros de Producción de Inmunobiológicos (producción de sueros antiofídicos y suero antiloxoscélico). La encuesta se organizó en forma de un cuestionario con 28 preguntas de opción múltiple, en la plataforma de encuestas en línea Question Pro, y fue difundida por correo electrónico, código QR y redes sociales (Facebook e Instagram), alcanzando 24 de los 26 estados de Brasil y el Distrito Federal. Los resultados demostraron que existe un clima predominantemente receptivo entre los profesionales en relación con el uso de opciones

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menos agresivas para la identificación equina, en sustitución de los métodos ígneos y criogénicos, una postura que se ha desarrollado a medida que ha madurado la importancia del bienestar equino, tanto en el ámbito económico como, sobre todo, en el ámbito deontológico.

Palabras clave: Bienestar Animal. Caballo. Seguridad Pública.

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1 INTRODUCTION

Humanity and horses have a long-standing relationship, dating back to the beginning of animal domestication and being involved in historical events (Mattosinho, 2017). This coexistence predates the historical records of the beginning of human civilisation, in which horses took part in agricultural, transport and war activities. Nowadays, horses are used in activities such as leisure, public safety, sports and even therapies for people with disabilities, as well as being used in the pharmaceutical industry (Leschonski, 2008; Carrijo and Murad, 2016; Miranda et al., 2020; Giacomantonio, 2015).

Even though they are used in a variety of ways (Hinchcliff and Geor, 2004), the main task assigned to them is still daily labour in agricultural activities. Data shows that Brazil has the fourth largest equine herd on the planet, with a total of 5,834,544 horses, ahead of the USA (10.260 million), Mexico (6.355 million) and China (6.027 million horses) (PARANÁ/SEAB, 2017). According to the Brazilian Institute of Geography and Statistics (IBGE), herd growth in Brazil showed an evolution between 2018 and 2020, with a drop in 2021 and remaining stable in 2022, with a market estimated at US$ 6 billion (Freitas, 2022).

In order to identify horses among communities, various options have been developed since the beginning of their domestication, ranging from physical marking to more current methods such as the use of microchips and satellites (Tiinside, 2022). Among the forms of physical identification, two stand out: hot and cold methods (Tonin and Cruz, 2023). These methods cause inflammatory processes in the first 90 minutes, temporarily compromising the individual's performance (Schwartzkopf-Genswein, K. S. et al. 1997), which suggests a significant impact on their well-being. In fact, such methods have a negative impact on the five freedoms of animal welfare, firstly by disrespecting the freedom from pain, which can lead to an imbalance in other domains such as behaviour and nutrition.

Thus, such marking methods must pass through the deontological sieve of animal welfare concepts, considering the growing debates on this topic, (Gontijo, et al. 2014). In view of this, it is interesting to spark debate among professionals about which process is less aggressive and about the real need for these options when compared to alternatives that do not cause suffering to the animal.

With regard to the use of physical identification methods with a higher degree of invasiveness if there are other options with similar or better effectiveness, the view of the decision-makers when identifying their horses seems to be a determining factor.

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The aim of this study is therefore to identify the position of those responsible for horses on the need for current forms of physical marking

2 METHODOLOGY

2.1 ETHICAL APPROVAL

This research was approved by the Human Research Ethics Committee of the Health Sciences Sector of the Federal University of Paraná, Brazil, registered under number 6.712.336/2023 and with CAAE number 55445522.6.0000.0102.

2.2 QUESTIONNAIRE AND RESPONDENTS

In order to capture the target audience's perception of physical marking methods and their real need for more efficient and less damaging alternatives, a quantitative survey was carried out in the form of a 26-question multiple-choice questionnaire.

The target audience was made up of heads of public and private establishments that keep horses, as well as owners of small properties and heads of higher education and technical education institutions.

The questionnaire was made available to potential respondents between 25 September and 23 December 2023. 382 participants answered the survey, 226 of whom completed it in full.

The interview was organised using the Question Pro digital tool and sent out via electronic messaging, social networks, QR-Code and multiplatform instant messaging and voice call applications for smartphones. The QR-CODE was particularly useful for disseminating the survey in environments frequented by the target audience. After the data-filling phases, the tool generated the link https://questionpro.com/t/AYnI5Zz1ex, which allowed access to the results of the questionnaire, safeguarding the identification of the interviewees, properties and animals, only pointing out the Brazilian states where the responses originated, the number of views, the total number of responses, how many questionnaires were completed, the percentage of completions and withdrawals, and for each question information was generated on the mean, variance, standard deviation, standard error and confidence interval.

The questions included level of education, access to material specifically addressing animal welfare concepts applied to equine management and, if relevant, which material, interest in receiving information on animal welfare concepts in equine management.

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The interviewees were also asked about support for events on the subject of animal welfare in their region or association, whether in person or online, the location in Brazil where the establishment is based, the length of time they have been working with horses, the classification of the property and the number of activities with horses.

Considering the plurality of equine breeds in Brazil, the interviewees were asked about the predominant breed, how the animals were handled, the use and type of physical marking or method of identifying the animals and knowledge of other forms of physical identification.

Finally, the interviewees were asked whether or not they would use a less painful option, which categories of horses are physically marked, the motivation for marking the horses, the use of anesthetics during physical marking and treatment after the application of the chosen method, whether they would choose a less painful option, the main motivation for changing the method, whether horses acquired with physical marking from other establishments receive the mark of the current property, which professional performs the physical marking and whether at any time in the history of the property a different method of physical identification was used than the one currently used.

3 RESULTS AND DISCUSSION

The survey ended with a total of 838 visualisations, with 382 people responding, and 24 states out of 27 in the Federative Republic of Brazil (Figure 1).

Figure 1

Brazilian states of origin of the participants in the online survey

Source: Authors.

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Some participants who received the questionnaire were unable to complete it at the time of access. Consequently, they only answered questions that did not require active involvement in equine management at that time. Despite 832 views, 382 people responded to the questionnaire, of which 226 completed it in full.

Most respondents were from the state of Paraná (33.6%), followed by Rio Grande do Sul (11.4%), São Paulo (8.0%), Rio de Janeiro (6.9%), Santa Catarina (6.1%), Mato Grosso (4.2%), the Federal District (3.8%), Minas Gerais (3.8%), Alagoas (3.0%), Espírito Santo (3.0%), Ceará (2.3%), Roraima (1.9%), Maranhão (1.5%), Mato Grosso do Sul (1.5%), Pernambuco (1.5%), Bahia (1.1%), Goiás (1.1%), Pará (0.9%), Piauí (0.9%), Sergipe (0.9%), Paraíba (0.8%), Rio Grande do Norte (0.8%), and Acre (0.8%).

The results indicate that horses are well distributed throughout Brazil, thus demonstrating the importance of the equine industry for Brazilian agribusiness.

The data on the respondents' states of origin are in line with the 2022 figures from the Brazilian Institute of Geography and Statistics (IBGE), which indicate that the state of Paraná has a herd of 247,626 horses, an increase of 380% compared to 2017. This highlights the state's significant contribution to the equine agribusiness in southern Brazil, where renowned breeding centres employ reproductive biotechnologies in various horse breeds.

The equine agro-industrial complex in Paraná reflects broader national trends that began in 1534 in the states of Bahia and Pernambuco, with the arrival of the first horses in Brazil (Carvalho, 2020).

In terms of educational attainment, 0.6% of respondents had completed primary education, 0.9% had incomplete primary education, 5.6% had completed secondary education, and 1.5% had incomplete secondary education. On the other hand, 27.3% had completed higher education and 12.2% had not completed it. In addition, 1.8% had taken continuing education courses, 24.8% had a specialist degree, 13.8% had a master's degree, 8.8% had a doctorate, and 2.2% were postdoctoral researchers.

Analysis of the educational data suggests that most professionals involved in equine management remain active in the field up to the undergraduate or specialisation level. After completing their master's degree, only a small portion continue to work in practice or academic development. These figures indicate a notable decline in direct involvement after postgraduate studies, with very few PhDs or postdoctoral researchers remaining involved with equines in the field. This finding highlights the lack of financial and research incentives in the area.

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The data also reveal that management of the site is usually entrusted to professionals with higher academic qualifications. Only a small percentage of administrators had completed or partially completed primary education, while a larger proportion had completed or partially completed secondary education. Management activities, specifically daily animal care, such as feeding, hygiene, cleaning facilities, operating equipment, repairing fences, and driving trucks, are delegated to professionals who, in general, in the private sector, have completed or partially completed primary education and partially completed secondary education.

Related activities, such as veterinary assistants, zootechnicians, administrative work, and agricultural technicians, are generally performed by professionals with a high school education. Activities directly related to equine health management, such as developing vaccination protocols, deworming, treating sick animals, and managing facilities, are generally performed by veterinarians with bachelor's degrees, veterinarians and zootechnicians with specialisations, a small number of veterinarians with master's degrees, and an even smaller number of veterinarians with doctorates.

Currently, another professional who plays an important role in equine husbandry is the zootechnician, who has been gaining recognition and prominence. In addition to being qualified to manage, plan, and administer equine facilities, these professionals are trained to work successfully in nutrition, feed and diet formulation, soil management, plant production, pasture formation and management, and food conservation.

Services related to biotechnology for horse breeding, which are also included in the list of services provided on the property, are generally performed by veterinarians with master's and doctoral degrees. With regard to administrative issues in equestrian establishments, it is still possible to find professionals with training in Equine Sciences, known as Hippologists.

When analysing the survey results in relation to education, it is noteworthy that professionals with primary education (complete and incomplete) represent less than 1% of respondents, which positively demonstrates the results of investment in basic education in Brazil, which since 1998 has been subject to criteria for linking government revenues regulated by Fundef (Fund for the Maintenance and Development of Basic Education and Teacher Training), thus enabling other professional options for rural workers. Another issue raised by the survey, in relation to the low percentage of professionals, is the exodus of labour to activities that require less qualified professionals.

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One positive factor observed is that the total number of professionals with primary education (complete and incomplete), incomplete secondary education and incomplete complementary training (horse handling, shoeing and transport of live animals) totals 16 respondents, which is lower than the number of respondents with secondary education (18), thus demonstrating the sector's interest in professionals with at least a complete secondary education. Another factor that points to a decrease in jobs in equine livestock farming is related to the technology applied in the sector, which requires qualified professionals. However, due to the ease of use of the equipment, the demand for labour is lower, since a single person can perform activities that, with the aid of technology, would require more employees.

Another positive finding of the survey is that the equine industry, specifically in the agricultural production stage, employs a large number of professionals with higher education. Of the 318 respondents, 284 have higher education, which means that 89.3% of professionals working in establishments with equine activities have higher education. This indicates that equine livestock farming in Brazil demands increasingly qualified professionals, whose training necessarily requires a change in mentality and attitude in favour of the concepts of mastery and freedom in equine welfare.

Such progress depends on the ability of professionals to assimilate new knowledge and technologies – an ability often facilitated by a higher level of education. This is reinforced by another finding of the survey, which indicates that most respondents had been exposed to information about equine welfare, with the majority having learned about the subject during their academic training. This finding highlights the fundamental role played by veterinary education institutions in Brazil in promoting animal welfare practices (Schlindwein et al., 2017).

In addition, 59.2% of respondents cited lectures and meetings of horse owners as their main source of information on equine welfare – second only to formal academic education. These events serve as effective platforms for the dissemination of knowledge, offering accessible language and practical dialogue between individuals from diverse educational backgrounds. From postdoctoral veterinarians to workers with only primary education, these forums encourage collaborative discussion and the practical application of animal welfare principles (Tostes, 2006).

The questionnaire also revealed that 85.8% of respondents had already had access to some type of literature on equine welfare, while 14.1% had never had contact with the

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subject. The most common sources of information were academic training (61.4%), lectures at horse breeding events (59.2%), scientific articles (53.5%), articles in non-indexed journals (37.3%), television or radio reports (34.2%), and events organised by breeders' associations (31.6%). This indicates a wide range of information channels, with academic training being the most influential source.

For a better analysis of the results related to the level of education indicated by the survey, it is appropriate to divide the activities within the farm, a sphere where the concepts of equine welfare should be applied more effectively, since it is evident that the practical adoption of such concepts brings good results in horse breeding, in addition to ethical aspects.

Events held by agricultural associations and at rural fairs are also highlighted as effective means of scientific communication, offering new perspectives to non-academic audiences and contributing to the translation of research into practice (Lakatos and Marconi, 1987; De Araújo et al., 2021).

An important finding is that most professionals expressed interest in receiving more material on equine welfare and showed support for online and in-person events addressing the subject. This reflects society's growing expectations of veterinary professionals to demonstrate a commitment to animal welfare — particularly in agro-industrial settings — where the public increasingly demands ethical conduct and humane treatment of animals (Langoni, 2014).

Scientific articles were considered the most reliable source of information on equine welfare. When asked about their interest in receiving more information on the subject, 83.2% of respondents expressed interest, while 16.8% did not. In addition, 98.8% said they would support events that promote discussions on equine welfare.

The data highlight the importance of promoting debate on the topic of animal welfare at all stages of education, from basic training to undergraduate and postgraduate courses.

As for the purpose of the facilities, 40% were managed by public security agencies, 14.5% were breeding farms, 10.3% were general-purpose farms, 9.9% were mixed farms (horses and other animals), 5% were riding schools, and 5% belonged to other categories. Among the establishments, 2% were research or teaching centres, 2% were stud farms, 2% were riding clubs, and 0.8% were equine therapy centres. These results highlight the importance of the Military Police as a key driver of the equine industry, which requires the development of products and the improvement of equipment essential for mounted policing

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activities, such as personal protective equipment for horses designed for use in specific operations. In terms of herd size, 27.6% of establishments kept between 1 and 5 horses, 6.1% between 6 and 10, 9.9% between 11 and 20, 8.4% between 21 and 30, another 8.4% between 31 and 50, 18.4% between 51 and 100, and 24.1% more than 100 horses, demonstrating that, although Brazil is among the countries with the largest equine population, it is mainly concentrated in specific locations, such as equine therapy centres, riding schools, and rural tourism establishments.

Regarding breed distribution, 35.4% of respondents indicated that the predominant breed was the Brazilian Equestrian Horse, followed by Crioulo (15%), Quarter Horse (11.9%), unspecified breed (11.9%), Mangalarga Marchador (4.6%), Mangalarga (3%), Thoroughbred (2.7%) and other breeds (5.8%). The results indicate that the equine industry is concentrated in two areas: sport (Brazilian Equestrian Horse) and field work (Criollo), demonstrating the multiple uses of horses in Brazil. Horses of the Brazilian Cavalier breed, in addition to sporting activities, are also used in public safety activities, and Criollo animals, in addition to their use in the field, also have their place in sports, such as apartation competitions. In terms of facilities, 56% of establishments used mixed management (paddock and stable), 23.9% used only stables, and 20% kept the animals exclusively in paddocks.

The main activities involving horses included equestrian sports (67.4%), public safety (Mounted Police) (38.0%), equine-assisted therapy (37.2%), breeding (29%), participation in official protocols (26%), field work (22%), national defence (Brazilian Army) (9.3%) and equestrian tourism (2.7%).

The data points to the wide variety of activities for which horses are used, especially equestrian sports, with more than 50% of responses, and, on the other hand, the use of horses in tourism, pointing to a niche that is still largely unexplored, considering Brazil's natural aptitude for such activity.

Of the 166 respondents who reported using a branding method, 52.7% used nitrogen (cold branding), 54% used fire (hot branding), and 4% used tattoos. In addition, 61% were aware of alternative branding methods.

When asked if they would consider changing their branding method, 44% said no, 44.3% said they would switch to cold branding, 10% preferred tattoos, and 1.6% chose hot branding.

As for the motivation for using their current branding method, 40.7% cited tradition, 26.1% cited compliance with association requirements, 18.6% cited lack of knowledge of

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alternatives, and 14.6% cited financial constraints. Regarding anaesthetic protocols, 31.1% of respondents stated that they were used during the branding process.

Regarding the use of a less aggressive method if it were available on the market, 75.2% of respondents said they would adopt it, 3.1% said they would not adopt it, and 21.7% said they would avoid physical marking altogether, if possible. Ethical concerns were the main motivation for switching to a less invasive method (89.7%), followed by improved quality of results (32.1%) and financial considerations (12.0%).

The data provided by the questionnaire indicates that there is still a slight predominance of the hot branding option, justified by the practicality of this method in relation to animal welfare issues. However, the same data shows a clear change in mentality, since, when asked, 44.3% of respondents said they would switch to cold branding. This conclusion is reinforced by the small percentage of respondents who would opt for hot branding (1.6%), combined with the fact that 89.7% of respondents would opt for a less harmful method, thus demonstrating an ethical repositioning in favour of basic welfare concepts in equine management.

A statistical correlation analysis was performed to examine the relationship between the professional segment and actions related to the use of cold and hot branding methods, pre- and post-branding care, switching to less harmful alternatives, and support for events that promote animal welfare. These data are presented in Table 1.

Table 1

Correlation between equestrian entities and animal welfare factors linked to methods of physical identification of horses, specifically Military Police (MP), Brazilian Army (BA), Equine Therapy Centre (ETC), Field Work (FW), Rural Tourism (RT) and factors related to the physical marking of horses and animal welfare

FACTORS	MP	BA	ETC	FW	RT
Cold branding	0,501	-0,003	0,378	-0,038	-0,023
Hot branding	0,114	0,374	0,121	0,221	-0,070
Pre-care	0,341	0,156	0,296	0,237	0,065
Post-care	0,272	0,133	0,280	0,200	0,164
Would change if possible	0,198	0,147	0,204	0,171	0,103
Less harmful	0,376	0,116	0,238	0,284	0,103
BEA events	0,376	0,166	0,383	0,283	0,087

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The correlation of data relating to the entities indicates that, of the seven factors analysed, three point to a strong commitment to the welfare of horses on the part of the Military Police in Brazil, not that the other entities do not pay attention to this issue.

The first factor that points to this issue is the correlation between cold branding and the Military Police, which is greater than the correlations with other entities. What draws attention to this result is the fact that physical branding is a less practical method than hot branding, which requires fewer financial and human resources, indicating that the motivation for choosing this method is the welfare of the animal. This line of reasoning is also reinforced by another correlation, the care taken before applying the method, which aims to reduce the animal's discomfort at the time of branding, despite the analgesia generated by skin contact with cold metal. These factors point to a higher positive correlation than that of other entities, specifically for a less harmful method.

When analysing the results of the correlation of the other entities, it can be observed that the correlation between hot branding and the Military Police, in fourth place in a universe of five entities, once again demonstrates its commitment to the animal welfare of the horses under its responsibility.

Still in the analysis of correlations, in the questions: post-care, change of option if possible, and support for events related to animal welfare, the Military Police ranks second, behind only Equine Therapy Centres, activities that began in Brazil in Military Organisations and the Military Police, fundamental locations for the dissemination of information relevant to the management of horses for such activities, within deontological concepts.

4 CONCLUSION

The historical need to physically mark horses has long been associated with herd control, rooted in a time when animals were seen as property. However, concepts of animal welfare — although not always formally recognised — have existed for millennia. These notions date back to ancient Egypt, through the Kahun Papyrus, the Code of Hammurabi, dating from 1780 BC, and sacred texts from various traditions, including Christianity, Judaism, Hinduism, and Islam. These ancient references have gradually evolved into contemporary understandings of animal welfare.

This study corroborates this historical trajectory, demonstrating that factors such as the availability of less harmful techniques and the provision of veterinary care after branding suggest that the equine sector is receptive to more ethical and effective identification

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methods. The results indicate that professionals working with horses are inclined to adopt management practices based on ethical principles and that invasive methods tend to be employed only in the absence of less harmful alternatives. A clear example is the acceptance of cryogenic (cold) branding over hot iron branding as soon as it became available.

Promoting the idea that physical marking is unnecessary depends largely on technological innovation. A significant step in this direction has been the development and increasing use of microchips in equine environments. However, microchips are still inadequate for herd-level identification, especially when horses share similar physical characteristics such as breed, sex, age, and coat colour.

In response to this challenge, artificial intelligence offers a promising solution through the integration of chip readers and video surveillance systems to enable facial recognition — an approach already widely used in human identification and increasingly viable for use with equines.

The main implication of this study is that, although physical identification methods are still used, the Brazilian equine agricultural sector shows a clear willingness to abandon them in favour of more humane, practical, and effective alternatives — as soon as these become available.

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