



 sciencedo

BALTIC JOURNAL OF LAW & POLITICS

A Journal of Vytautas Magnus University
VOLUME 16, NUMBER 2 (2023)
ISSN 2029-0454

Cite: *Baltic Journal of Law & Politics* 16:2 (2023): 549-562
DOI: 10.2478/bjlp-2023-0000040

Penal guarantees for the improvement of the offspring of farm animals

Thamer Ramadhan Ameen

Law Department, Al-Mustaqbal University College, 51001, Hillah, Babil, Iraq
thamer.ramadan@mustaqbal-college.edu.iq

Ammar Abbas Al-hussaini

Law Department, Al-Mustaqbal University College, 51001, Hillah, Babil, Iraq

Received: December 20, 2022; reviews: 2; accepted: January 12, 2023

Abstract

Increase the productivity of farm animals such as (cows, sheep, goats, poultry, fish) by increasing the quantities of red and white meat, milk and its derivatives, eggs, wool and leather as a raw material for national industries and others in order to keep up with scientific developments in the field of geology. Through the Ministry of Agriculture's programs, to make a significant contribution to keeping up with the steady increase in the population and to enable the greatest number of them to obtain the productivity of this wealth from meat, milk, and eggs in a simple manner proportional to their limited monthly income, as well as the role of penal protection by making the criminal penalty a punishment that takes away freedom and the financial penalty a punishment that takes away money, it makes sure that productivity goes up which is good for food security and national wealth.

Keywords

penal guarantees, farm animals, livestock, food security, production

Introduction

Disrupting the improvement of farm animal progeny is currently a crime that hurts animal productivity and limits its ability to support the national economy and food security in a way that keeps pace with population growth (Roberts, 2008). Its scientific components, which are determined by professionals and veterinary and biological experts within safe limits in its application and are not harmful at all. The first criterion is to violate the principle of improving the progeny of agricultural animals (Young, 2013).

To understand what this breach means, we need to look at both traditional ways to improve animal offspring and what science has done in this area. We also need to look at linguistic and idiomatic meanings, as well as what Iraqi and Lebanese law says. For example, the Lebanese lawmaker demonstrated the improving animal offspring and monitoring the operation of multiplication and vein record regulation, as directed by the Iraqi legislator. This rule was enacted in order to improve the sex of local animals and increase their productivity in terms of meat, milk, leather.

The traditional methods used in vaccinating agricultural animals: Known methods of this vaccination. First, hand mating, if we use cow vaccination as an example, the bull is separated from the rest of the cows, and when any changes are noticed while they are in puberty, they are left with the bull to fertilize them. Some may resort to tying the cow to be fertilized only once, then the bull is isolated from her and left to fertilize her again after 8–12 hours have passed from the first insemination to ensure fertilization. Second, pasture mating, during the pollination season, the bull is let out to graze in the pasture with a group of cows. After leaving the bulls with the cows for the first two mounting cycles, 80% of the cows are exposed. Bulls that haven't been fertilized after the fourth mounting cycle are usually left out. This method of insemination has been criticized for a number of reasons, such as:

1. During the pollination season, the bull is let out to graze in the pasture with a group of cows. 80% of the cows are exposed after leaving the bulls with the cows for the first two mounting cycles. Bulls that haven't been fertilized after the fourth mounting cycle are usually left out. This method of insemination has been criticized for a number of reasons, such as: cows that have been vaccinated on the pasture by more than one bull, and it is unknown which of them administered the vaccine. Because of this, it is impossible to know who the real father of the calves is, and this is one of the steps that must be taken during the selection and data collection process.

2. Bulls may re-vaccinate one cow multiple times during its estrus while leaving another cow in estrus.

3. Some bulls may try to block each other from pollinating, or they may push themselves to repeatedly re-vaccinate one of the cows and then become unable to pollinate. In general, pure herd breeders rely on manual or artificial insemination while using a holistic approach. The majority of commercial herds are bred by pollinating the meadows on their farms.

Third: Artificial insemination is a way to get a female animal pregnant by using sperm from a male with good genetic traits and qualifications.

1. This method of pollination is used to boost the growth of livestock and livestock productivity.
2. It is regarded as a primary technique of raising the number of cows and, as a result, greatly increasing animal milk and red meat production. As a result, these materials provide both a high-earning income and self-sufficiency.

3. IVF helps prevent venereal disease in fertilized females.
4. This approach allows for the selection of male genetic energy at an early age and the use of large numbers of offspring in various flocks and settings, resulting in the widespread of genetic improvement in thousands of offspring with high efficiency, speed, and low cost.
5. Helps the earner avoid the expenses of acquiring and caring for stallions.
6. It's a way to avoid using unnamed stallions, which stymie genetic progress.
7. Assists in the biology and ongoing monitoring of retrieved vaccine or sperm in national and international IVF centers at all stages of production and IVF procedure.

Among the prerequisites for the success of the artificial insemination process are:

1. Balanced feeding, proper ventilation and lighting, animal health and hygiene, ongoing scientific monitoring, and sufficient living conditions for cows.
2. The success of artificial insemination depends on finding the signs of estrus early and on time.
 1. The earner is largely in charge of observing and recognizing any changes in the cow herd behavior.
 3. It should be monitored for signs of estrus in the herd of free-range cows outside feeding and milking times.
 4. Even with (hidden) females, the breeder must spend enough time (twice a day, early in the morning before milking and late at night) to carefully watch for signs of estrus.
 5. To make the detection of estrus signals easier, the cows should be numbered carefully.

It should be noted that artificial insemination is not as widely used in meat cattle as it is in dairy cattle, and there is no particular reason for this. But the way meat cattle are raised makes it hard to find common cows for artificial insemination. Straws for artificial insemination can be bought and chosen from a variety of sources. It is suitable for each cow, whether for milk, meat, or dual purposes, and is compatible with the intended quality. The pure cattle associations have established several controls or rules that govern (the usage of frozen sperm), the most important of which are as follows: a-Most organizations forbid the usage of sperm to describe what is in vaccines. Four different herds, the semen of a bull that has been slaughtered or died is not used in the production of pure calves to be recorded, and the mixed semen of several bulls is not used in the insemination of cows. b-The number of cows that should be left with each bull for insemination depends on the age and health of the bull as well as other rules.

Second section: Advanced scientific methods for animal vaccination:

Due to the presence of (Barrier) hurdles between species that are difficult to breach, mating with the goal of promoting genetic improvement formerly occurred only between animals of one breed or one species (Tizard et al., 2016).

As it appeared (animals through genetic engineering) in the last quarter of the twentieth century, there was remarkable progress in the uses of genetic engineering. In the mid-eighties, scientists were able to overcome hurdles using modern biotechnology. The first report of Hammeretal study (Hammer et al., 1985) described how agricultural animals (rabbits, lambs, and pigs) were used to create animals through genetics, and then experiments continued to include (cattle), goats, hens, and 35 different fish species) goats, chickens, and 35 species of fish). The goals of genetic modification using modern biotechnology are almost the same as the goals of traditional methods, which are to increase animal productivity and food conversion efficiency, increase animal resistance to disease, increase animal ability to adapt to environmental conditions, and improve or change the qualities of animal products(Oltenacu & Broom, 2010). But there are two unique and different parts of modern genetic modification that can't be done with traditional methods, the first is the speed with which desired traits can be obtained and the second is the transfer of certain traits (genes) that are unrelated to one another, resulting in the formation of animals across genetics. Based on these two characteristics, we can conclude that using this method has both benefits and drawbacks. One of the declared goals of genetic engineering in farm animals is to provide food for millions of poor and disadvantaged people around the world. Following that are medical and therapeutic goals and benefits such as organ transplantation, pharmaceutical compound production and the use of animal models or models as alternatives to humans in the study of human diseases and ways to treat them and so on (Singh, Kalsan, Kumar, Saini, & Chandra, 2015).

Aside from the composition of milk, scientists are interested in changing complicated qualities like development and metabolism, as well as the types of animals (beards) that evolved under the intensive farming system(Gowane et al., 2017).Over a ten-year period, almost maximum production rates were achieved as a result of selection and improvement processes (1995-2005). A dairy cow, for example, produces 6400 kg of milk per season under intensive farming conditions. However, the distinguished cow of the type (Holstein) can give about (8000-10000) kg of milk per season, compared to (2000-3000) kg only about seventy years ago (1935), and similarly, the laying hen can give about (8000-10000) kg of eggs per season (70 eggs) per year, then it reached more than (300 eggs) annually. When it comes to meat or broiler chicks, they reach marketing and slaughter age at roughly six weeks as opposed to twelve weeks thirty years ago and we can also state that these examples and others that represent the safe maximum limits of animal productivity will sound the alarm if they are exceeded (Potts, 2016), it is not reasonable for the increase in productivity to continue without limits, hence the limits can also be indicated for the penal responsibility for the risks and damages that result from exceeding these limits, as it is unlikely. One of the most significant downsides of gene transfer technology today is that it is expensive, time-consuming, and inefficient, as it results in the deaths of large numbers of fetuses or infants(Niemann & Kues, 2003). Aside from the common incidence of congenital

defects during trials, there are also the dangers that may arise from genetically modified animals escaping and mingling with creatures in the natural environment, as well as the spread of alien DNA that leads to environmental imbalance (Lu, 2008) among the goals and benefits of improving the productivity of some other animals such as increasing the speed of sheep growth and wool productivity as well as increasing the speed of fish growth and to complete the understanding of the concept of this crime, and in severe cases, to the elimination of natural animals especially if genetically modified animals have stronger competitive advantages .

We'll look at the linguistic and idiomatic meaning of breach which is as follows: failed in something, fell short in it, left it and did not take it, violated the order, abused and spoiled it; violated the laws, departed from what they require of behavior; violated his duties, fell short in them and violated the meaning of improving, departed from what they require of behavior.

The Food and Agriculture Organization of the United Nations (FAO) defines animal breeding improvement as the genetic improvement of animal populations through selection and mixed breeding. (Kosgey & Okeyo, 2007).

Its defines artificial insemination as follows: "It is the method by which semen can be acquired in an automated way, then diluted and kept refrigerated (at 5 °C) and frozen (at-79 °C or-196 °C) until it is deposited in the wombs of females when they become pregnant(Stunden, 1996).

The phrase "improving animal breeding" was included in the above-described Lebanese and Iraqi law texts, but no definition was provided. The application of the laws made by the legislature is the basic concept of the judiciary, and based on what has been provided, the crime of violating animal breeding can be characterized as follows: This is done through the use of traditional or modern technologies, and it puts these creatures in risk, jeopardizes their safety and health, and has an impact on animal productivity, human health, and the environment(Pound, 1907).

The second requirement

The criminalization of violations of farm animal improvement, which can be dealt with as a crime through its elements, which include the special element, the material element, the moral element, and the prescribed penalty (O'Hear, 2004), as follows:

The private corner

The unique aspect of this crime is tied to its subject and location, which is everything to do with enhancing animal offspring and the role of this improvement in raising livestock's capacities and increasing their productivity efficiency(Webster, 2008).The criminalization of violations of farm animal improvement, which can be dealt with as a crime through its elements, which include the special element, the material element, the moral element, and the prescribed penalty is available in

Lebanese and Iraqi legislation, and in another legislative text in which the Lebanese legislator singled out the subject of this crime is what he specified of the powers of veterinary medicine in this regard.

The Lebanese Animal Protection and Welfare Law addressed general and specific restrictions governing animal progeny and reproduction, as well as the necessity of providing basic needs and immunizations for animals according to their type and age (Sollund, 2019). The lawmaker also specified that any facility for the sale or reproduction of animals must receive a previous license. According to this law, the Minister of Agriculture must make a decision about which animals can be sold or bred in these institutions (Wolfensohn & Lloyd, 2008).

It's important to keep track of where the animals in the facility come from. This statute mentions them in terms of the breeding center's responsibilities. Aside from the general conditions, the breeding centers are subject to particular conditions set by a Minister of Agriculture decision, provided that the animal species and age are taken into account. The necessity of keeping up with scientific growth in the formulation of a law that contains basic rules for dealing with animals and rules for selling animals and their breeding centers is one of the reasons that the Lebanese legislator required this law. The lawmaker told the Ministry of Agriculture to tell the public where animal sex improvement operations are done in accordance with the law. After that, no one can use any kind of stallion animal in the fertilization process unless the main artificial insemination centers for bulls and rams give their permission.

Free horses may not be exhausted without the permission of the ministry's responsible authority, and artificial insemination centers may castrate animals that are not appropriate for offspring (McShane & Tarr, 2007). In all centers where government stallions are being prepared for him, there is no charge for stocking. The lawmaker also mandated that the Minister of Agriculture or anybody he authorizes, appoint the following officials by instruction: Firstly, terms for loaning government stallions (other than horses) to agricultural cooperative societies and cooperative farms, communal animals and breeders in order to improve progeny and raise production efficiency.

Secondly, defining the terms and conditions for selling to breeders for the purpose of improving the stallions of government animals that the Directorate General of Livestock improves or creates.

Third, registering, examining, and supplying one or more sorts of animals eligible for offspring. Their owners are provided with certifications and paperwork attesting to this, as well as Fourth, establishing regional animal fairs and marketplaces, as well as providing animal breeders with gratuities, cash, and in-kind prizes.

Fifth, identifying and correcting the genera and descriptions of economically important animals. The subject and location of the offense were related to improving animal breeding and artificial insemination of animals, according to texts found in both Iraqi and Lebanese legislation (Foltz, 2014). Despite the fact that the research focuses on agricultural animals intended for human consumption in the

production of meat, milk, and other products because it is the most closely related to animal production, food security, and the national economy, the legislation does not only apply to these animals but also to others that reflect the role and importance of eugenics for these animals, as evidenced by the law. From the construction of the aforementioned animal fairs and markets, such as the Iraqi member's interest in horses, to what the Lebanese legislator remarked about the facilities designed to entertain the public with particular animal displays (Mottet, Teillard, Boettcher, De'Besi, & Besbes, 2018)

The Material corner

The criminal act

This act is manifested by breaching what is specified in relevant and effective legal texts such as the perpetrator use of a stallion animal in the shedding process after determining the areas and without the approval of the main artificial insemination centers for bulls and rams. The veterinary authority is in charge of artificial insemination centers, and refusal to follow its instructions is a breach of the law, which deals specifically with the operations of Lebanon's Department of Livestock and Poultry Breeding (Homs, 1957). When violating these actions, which were primarily issued by the Ministry of Agriculture (Directorate of Livestock Wealth), these violations are considered a violation of the obligations imposed by the Lebanese legislator on the breeding centers, and are subject to the conditions specified by the Minister of Agriculture, taking into account the species, safety, and health of the animal (Hannum, 1989). It is also a violation of the law, as well as a violation of the obligations imposed by the Lebanese legislator on establishments selling animals, including: Providing periodic health supervision on animals (Moorehead, 2004). The products for sale are imported from other countries and listed in the CITES appendices, similar to how the Iraqi legislator required the Minister of Agriculture or his authorized representative to issue instructions setting the conditions for lending government stallions (except horses) to agricultural cooperative societies, cooperative collective farms, and eugenics breeders. Increasing their productive efficiency as well as defining the conditions for selling the government stallions that are improved or produced by the general directorate of livestock to breeders for the purpose of improvement (Wyler & Sheikh, 2008).

It is important to note that Iraqi and Lebanese laws that criminalize behavior or actions that hurt the improvement of animal offspring have focused on artificial insemination of these animals as long as it is done under the supervision of the ministry of agriculture and the veterinary authority through breeding centers or vaccination centers and in a way that is consistent with what the World Health Organization (WHO) recommends better than manual pollination or pasture pollination previously mentioned in terms of increasing the number of animals and their production efficiency of meat and milk, as well as in avoiding the expected negative effects as some have pointed out. By improving the genetic characteristics

of cows and buffaloes to increase their abilities in the production of meat and artificial insemination reduces the expected negative effects of natural insemination, such as the insemination of a large animal for a small animal or the transmission of many diseases, artificial insemination reduces the expected negative effects of natural insemination, such as the insemination of a large animal for a small animal or the transmission of many diseases.

Second, the criminal result

It is well understood that the term "criminal consequence has a material meaning as a physical phenomenon as well as a legal meaning as a legal idea, and that despite their differences, they have a close relationship. Also, everyone knows that the criminal result as a material phenomenon is the change that happens in the outside world and with the last of the situation or the situation before the behavior was given, as well as the change that happened after the behavior was given (Kelsen & Trevino, 2017). The animals involved in the crime are ready to have babies during their breeding season, which is set for a certain amount of time based on how they are made. They are doing this against the law, which is shown by the instructions from the Ministry of Agriculture and the Department of Veterinary Medicine.

There is no improvement in the offspring of these animals, and as a result, this result is detrimental to the national economy and food security by failing to contribute to the development of livestock in terms of increasing their numbers and producing meat and milk in the required quantities to meet the population's needs (Smith et al., 2013). The aggression that gets an interest or a right that the legislator has valued as a wall represents the criminal consequence as a legal concept. Penal protection, and the illegal outcome here is represented by harming society's right to expand its animal riches and supply its human and food needs by developing the offspring of these animals, according to this notion (Andenaes, 1965). By violating these conditions and instructions, this abstention takes the place of a positive action, resulting in the same criminal result as mentioned above. But the rule can be used for simple negative crimes like failing to report a felony that violates the security of the state to show that this meaning has not changed because the outside circumstances were the same before and after abstinence. By law, breaking the rules and instructions of the Ministry of Agriculture and the Department of Veterinary Medicine has the same effect as breaking the rules about the improvement of animal offspring.

The causal relationship

The causal link is a connection between two physical events (the crime and the crime's result), and its clear that it shows how the crime was caused by the crime (Wikström, 2006). If the perpetrator had not violated what was approved by the veterinary authority and the instructions of the Ministry of Agriculture regarding

artificial insemination of animals, the aforementioned criminal result would not have been achieved, and the causal link as a material link is not perceived in abstinence crimes. So, breaking the law about improving the offspring or sex of animals, as stated in Iraqi and Lebanese laws and when punishable abstinence is an option means the same thing as breaking the law about improving the offspring or sex of animals and not following the orders and bans of the veterinary and agricultural instructions approved by law (Otto, 2005). The perpetrator is asked about the crime that occurred by his refusal.

The Moral corner

The criminal intent in this crime is reflected by the knowledge of the ingredients of the crime and the direction of the will to achieve or accept it. Potential intent such as the perpetrator's knowledge of veterinary health instructions and Ministry of Agriculture instructions published in the Official Gazette, and his direction to act in violation of them, is necessary to know the reality of the material act that the perpetrator commits, and if he makes a mistake, the mistake should be essential in order to negate the intent. Because the process of artificially inseminating the animal involved in the crime takes place in licensed and publicized areas as required by law and under the watch of professionals from the Veterinary Medicine Department, there is no way to see it as a fundamental mistake.

Punishment

Those who didn't follow the rules of this law were punished by the Iraqi government with a maximum of one year in prison, a fine, or both. In order to provide reasonable deterrence for the culprit, we expect that the Iraqi legislator would impose the imprisonment sentence without stating its maximum limit and with the appropriate fee without mentioning the judiciary in this.

The penalty stipulated in Lebanese law applies to all details of violating the texts contained in the Lebanese Animal Protection and Welfare Law which of course includes what is related to the requirements of breeding for these animals and the obligations of selling them, but the crime has been limited to farm animals due to their stronger connection to animal production from where these animals multiply and their exploitation.

The subject of this crime did not include all the animals mentioned in the regulations and schedules of CITES (Winthrop, 2000) which is a matter under consideration by the discretionary authority of the trial court according to the facts of the case before it, the Lebanese legislator punished punishable by a fine. Whoever violates the provisions of any of the articles of this law faces a fine of three to ten times the official minimum wage, as well as a penalty of imprisonment ranging from three months to two years and a fine of twenty to fifty million Lebanese pounds if they establish any of the aforementioned establishments in violation of the rules stipulated in this law.

In addition to the permitted penalties of temporary or permanent closure of the establishment and animal confiscation allowed by the legislature to the appropriate court, the same can be said for the sale of animals at a public auction. In actuality, these punishments are more tied to anything other than the farm subject of the crime, with a doubling of the penalty in the event of a second offense. We would like a Lebanese lawmaker to name the farm animals hurt by the crime in question because it's important for food security and the economy of the country as a whole. We'd also like the legislator to raise the ceiling of the penalty that takes away freedom without saying how high it can go, and the matter is always taken into account by the trial court.

Results

The difference between the old traditional methods of vaccinating farm animals, especially (cows, sheep, pigs, etc.) and the steady scientific progress in genetic engineering is reflected in the increase in animal productivity of red and white meat, and others and in a manner that supports food security and national income, as well as increasing table eggs in very large quantities, when genetic engineering deals with poultry as well as fish. The difference between the old traditional methods of vaccinating farm animals, especially (cows, sheep, etc.) and the steady scientific progress in genetic engineering, which is reflected in the increase in animal productivity of red and white meat and other products in a way that supports food security and national income, as well as increasing table eggs in large quantities when genetic engineering is used on poultry and fish.

Although artificial insemination is a process that is considered and widely used in Iraq and other countries such as Lebanon. This does not preclude us from dealing with genetic engineering data that emerged in the last quarter of the twentieth century and had no positive impact on society's subsistence level, productivity, or national income; similarly, dealing with genetic engineering is preferable to dealing with artificial insemination alone, just as dealing with artificial insemination is preferable to dealing with traditional insemination.

It is acknowledged that failing to contribute to the enhancement of farm animal progeny has a negative impact on the national economy and food security (Béné, Macfadyen, & Allison, 2007) since the goals of both artificial and natural insemination as well as genetic engineering are the same and the only difference between these methods is the number of offspring they produce, it is important to use logic to keep up with progress in this area.

It should be highlighted that the penalty provided in Iraqi laws (a year in prison or a fine or both) for anyone who violates the law's provisions is an insufficient punishment for this offense with significant economic consequences.

It is noted that the Ministry of Agriculture's role as the body responsible for research is insufficient and that it has not embarked on genetic engineering in improving the offspring of farm animals that has been internationally approved for nearly half a century, despite the fact that it is possible to adopt it and regulate the

mechanisms of animal production as well as how to deal with specialized cadres from veterinary medicine and agriculture faculties.

Conclusion

It is possible to determine the differences in results between artificial and traditional methods, as well as the use of genetic engineering by approved scientific methods, and then deal with what raises the productivity ceiling balanced with the population increase. We propose that the Ministry of Agriculture allocate model farms focused on the use of genetic engineering in the development of farm animal offspring train specialized cadres of graduates from veterinary medicine and agriculture faculties and provide financial support in the form of grants, loans, and financial advances derived from surplus animal production.

We recommend that the Iraqi legislator repeal the law establishing the Iraqi animal and replace it with a law aimed at improving the offspring of farm animals, or amend the law to include provisions aimed at improving the offspring of these animals, as well as the adoption of internationally accepted statistical data in terms of red meat production, white, milk, and table eggs. Adoption of the role of the punishment-harm relationship in order to defend the national economy and food security. People who work with animals for the Ministry of Agriculture will be rewarded and punished based on the principle of reward and punishment.

References

- Andenaes, J. (1965). General preventive effects of punishment. *U. Pa. L. Rev.*, 114, 949.
- Béné, C., Macfadyen, G., & Allison, E. H. (2007). Increasing the contribution of small-scale fisheries to poverty alleviation and food security: Food & Agriculture Org.
- Foltz, R. (2014). *Animals in Islamic tradition and Muslim cultures*: Simon and Schuster.
- Gowane, G., Gadekar, Y., Prakash, V., Kadam, V., Chopra, A., & Prince, L. (2017). Climate change impact on sheep production: Growth, milk, wool, and meat. In *Sheep Production Adapting to Climate Change* (pp. 31-69): Springer.
- Hammer, R. E., Pursel, V. G., Rexroad, C. E., Wall, R. J., Bolt, D. J., Ebert, K. M., . . . Brinster, R. L. (1985). Production of transgenic rabbits, sheep and pigs by microinjection. *Nature*, 315(6021), 680-683.
- Hannum, H. (1989). International law and Cambodian genocide: the sounds of silence. *Hum. Rts. Q.*, 11, 82.
- Homsi, G. H. (1957). *The Administrative Relations between the United States Operations Mission to Lebanon and the Lebanese Ministry of Agriculture*: American University of Beirut (Lebanon).
- Kelsen, H., & Trevino, A. J. (2017). *General theory of law & state*: Routledge.
- Kosgey, I., & Okeyo, A. (2007). Genetic improvement of small ruminants in low-input, smallholder production systems: Technical and infrastructural issues. *Small Ruminant Research*, 70(1), 76-88.

- Lu, B.-R. (2008). Transgene escape from GM crops and potential biosafety consequences: an environmental perspective. *Collection of Biosafety reviews*, 4, 66-141.
- McShane, C., & Tarr, J. (2007). *The horse in the city: living machines in the nineteenth century*: JHU Press.
- Moorehead, D. L. (2004). *The evolution of animal cruelty laws: A comparative analysis of animal cruelty laws in the United States and Europe*: Central Missouri State University.
- Mottet, A., Teillard, F., Boettcher, P., De'Besi, G., & Besbes, B. (2018). Domestic herbivores and food security: current contribution, trends and challenges for a sustainable development. *Animal*, 12(s2), s188-s198.
- Niemann, H., & Kues, W. A. (2003). Application of transgenesis in livestock for agriculture and biomedicine. *Animal reproduction science*, 79(3-4), 291-317.
- O'Hear, M. M. (2004). Sentencing the green-collar offender: Punishment, culpability, and environmental crime. *J. Crim. L. & Criminology*, 95, 133.
- Oltenu, P. A., & Broom, D. M. (2010). The impact of genetic selection for increased milk yield on the welfare of dairy cows. *Animal welfare*, 19(1), 39-49.
- Otto, S. K. (2005). State animal protection laws-the next generation. *Animal L.*, 11, 131.
- Potts, A. (2016). 1 What is Meat Culture? In *Meat culture* (pp. 1-30): Brill.
- Pound, R. (1907). Common law and legislation. *Harv. L. Rev.*, 21, 383.
- Roberts, W. (2008). *The no-nonsense guide to world food*: New Internationalist.
- Singh, V. K., Kalsan, M., Kumar, N., Saini, A., & Chandra, R. (2015). Induced pluripotent stem cells: applications in regenerative medicine, disease modeling, and drug discovery. *Frontiers in cell and developmental biology*, 3, 2.
- Smith, J., Sones, K., Grace, D., MacMillan, S., Tarawali, S., & Herrero, M. (2013). Beyond milk, meat, and eggs: Role of livestock in food and nutrition security. *Animal Frontiers*, 3(1), 6-13.
- Sollund, R. A. (2019). *The crimes of wildlife trafficking: Issues of justice, legality and morality*: Routledge.
- Stunden, C. E. (1996). *Studies on reproductive characteristics and artificial insemination in captive Mallard Ducks (Anas platyrhynchos)*. University of British Columbia,
- Tizard, M., Hallerman, E., Fahrenkrug, S., Newell-McGloughlin, M., Gibson, J., de Loos, F., . . . D'Occhio, M. (2016). Strategies to enable the adoption of animal biotechnology to sustainably improve global food safety and security. *Transgenic research*, 25(5), 575-595.
- Webster, J. (2008). *Animal Welfare: limping towards eden: A practical approach to redressing the problem of our dominion over the animals*: John Wiley & Sons.
- Wikström, P.-O. H. (2006). Individuals, settings, and acts of crime: Situational mechanisms and the explanation of crime. *The explanation of crime: Context, mechanisms and development*, 61-107.
- Winthrop, W. (2000). *Military law and precedents*: Beard Books.

Wolfensohn, S., & Lloyd, M. (2008). Handbook of laboratory animal management and welfare: John Wiley & Sons.

Wyler, L. S., & Sheikh, P. A. (2008). International illegal trade in wildlife: threats and US policy.

Young, R. J. (2013). Environmental enrichment for captive animals: John Wiley & Sons.