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Bovine Natural Taming

Diogo G. Jayme, Nilson D. Oliveira,
Cristiano G. Jayme, Lúcio C. Gonçalves,
Joana R. Glória, Telma Martins,
Ana Luiza C.C. Borges, Ricardo R. Silva and
Vinicius S. Raposo

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Abstract

Animal behavior is a function of species biology, interaction with the environment and experience previously acquired. Natural taming is a set of techniques used to tame the animals without stress and with patience and respect. They are conditioned to follow man's commands in a quiet way, resulting in more reliable and productive animals. Cattle learning process has enabled the development of management techniques, such as the interactions between them and humans. These techniques aim to use the cattle natural behavior during the management operations, allowing gathering and moving the animals to other areas of the pasture, corrals or even outside the farm. These techniques are mainly important when cattle are raised on pasture, with less contact with people, resulting in less herd control and greater reactivity of animals to management. Many repetitive exercises are used, conditioning the animal in a gentle and progressive manner, without the use of force and pain, to obtain the desired commands. It is an activity that requires patience, bringing good results, better than those achieved through traditional taming, which can cause many traumas.

Keywords: beef cattle, behavior, dairy cattle, gentle, management, welfare

1. Introduction

Humans and animals have interacted for thousands of years, and from 6000 B.C., this relationship has intensified [1]. In twentieth century, as world population increased a lot, intensive

breeding systems have emerged and so considerably altering the environment available to animals. New production systems require physiological and behavioral adaptations of the animals and the men to the new management used.

Taming is a domination and submission process that men teach animals to do what men wish [2]. Unfortunately, there still have cruelty and punishment with physical pain in some cases. Management that does not respect the animal and does not promote animal welfare cannot be accepted anymore. With the strengthening of the concept of animal welfare, we have sought ways to realize the taming and the desired management through non-aversive methods that do not leave undesirable behavioral effects in the herd. Thus, the natural taming stands out in the animal routine management in the farms, for presenting fast and efficient results.

Natural taming is a set of techniques used to tame the animals without stress and with patience and respect. They are conditioned to follow man's commands in a quiet way, resulting in more reliable and productive animals [3].

2. Natural taming

2.1. Bovine ethology

Ethology is the study of animal behavior in natural environments. The main interest of ethologists is instinctive or innate behavior [4]. Ethologists believe that the secrets of animal behavior are in the genes and in the way they were modified during evolution to deal with particular environments. Mammals innate behavior patterns can be replaced by learning. However, in some situations, animals tend to revert to patterns of innate behavior, generating conflict between conditioned and instinctive behaviors [5].

The temperament presents low to medium heritability and repeatability [6]. In cattle, the heritability was estimated from 0.40 [7] to 0.53 [8].

The cattle are gregarious animals and, by their nature, are reluctant to separate from their herd companions and to join with strange animals. When subjected to situations that cause pain, social isolation, sudden noise, fear, cattle present stress and react to these aversive situations by modifying their behavior, which may increase movement or attempt to escape [9, 10].

The animal temperament determines how it will react during handling. There is genetic effect, but animal previous experience influences very much too [11]. Animals handled with care and quietly tend to have a lower flight zone, being easier to work than those ruthlessly managed [12].

2.2. Behavior of cattle

Cattle are herbivores that live in groups, being considered prey in the nature. To stay alive, these animals need to be on constant alert to escape from predators. This behavior aims at perpetuating the species [13].

Usually cattle behavior can be determined by the way these animals react to other same species animals, other living organisms, the environment and the overall reactions to adapt or adjust to the various conditions encountered [14]. On the other hand, in pastures and corral animal behavior is a result of the instinct and the response of learning from the environment [15].

According to Bertenshaw and Rowlinson [16], cattle learning process has enabled the development of management techniques, such as the interactions between them and humans. These techniques aim to use the cattle natural behavior during the management operations, allowing gathering and moving the animals to other areas of the pasture, corrals or even outside the farm. These techniques are mainly important when cattle are raised on pasture, with less contact with people, resulting in less herd control and greater reactivity of animals to management. Such conditions increase the risk of accidents while handling animals.

Cattle learning process, such as the interactions between them and humans, has also enabled the development of management techniques. These techniques aim to use the cattle natural behavior during the management operations, allowing to gather and move the animals to other areas of the pasture, corrals or even outside the farm. These techniques are mainly important when cattle are raised on pasture, with less contact with people, resulting in less herd control and greater reactivity of animals to management. Such conditions increase the risk of accidents while handling animals.

2.3. Group social life

Animals live in group to protect themselves from predators. Living in groups it is easier to escape. Still today, cattle should always be conducted in groups and handled in groups. It is quite stressful for the animal to be isolated from the herd, which can lead to behavior of sudden changes such as aggression and agitation.

The cattle recognize other animals in the group, and the regrouping can alter the normal animal behavior [17] and normally sets out the hierarchy. Grouping of unfamiliar animals is found to increase aggression and social stress. The animals become less efficient to produce due to the effects on feed intake [18]. After regrouping cows have inferior milk yield and increase the somatic cell count in the milk [19].

Social dominance behavior is a major component of social behavior in cattle, as groups of cattle will establish social hierarchies, which can reduce the level of aggression in the herd [20].

2.4. Bovine sight, flight zone and balance point

For taming and natural handling, it is necessary to know and understand animal behavior, how they sense environment and how they express their feelings. In this way, it is possible to analyze and predict their reactions, getting an efficient, appropriate and less stress management. Animal behavior is a function of species biology, interaction with the environment and experience previously acquired. Man must provide the necessary resources for cattle adaptation to production systems, thus avoiding damages to animal welfare and economic return.

Because they are a natural prey, cattle have an important characteristic, which is the lateral location of the eyes. This location allows for binocular and monocular vision, with a 345° view field [21]. Therefore, the animal has the side view without turning your head. However, there is a zone behind the animals, called the blind zone, in which they cannot see [22].

Figure 1 shows a bovine vision.

According to eyes location, bovines move in circles and always keep a safe distance from the handler, from where they can see him. That is why we must be careful when handling the animal, because if the animal does not see the human approach, it may become scared and has sudden reactions. Shadows, strong reflections and bright colors could be seen as threats to animal, which could generate difficulties and management problems. Cattle can perceive details and objects that go unnoticed by the man's vision, which can make management difficult or even impossible. The flight zone is the minimum distance allowed by the animal to approach humans before starting to move (escape), and their size depends on the animal. Different animals will have different flight zones, depending on the domestication degree and the interaction with the handlers [23].

Very quiet animals have a small or no flight zone, so people can touch them. However, if an animal walks away with the approach of a person, it is because it has entered its zone of escape [24]. Balance point is an imaginary line at the animal's shoulder, forming an 90° angle with its body. Bovine animals move forward when people are behind that point, and backward if people are before the break-even point. **Figure 2** shows flight zone and where handler must be for the animal to move.

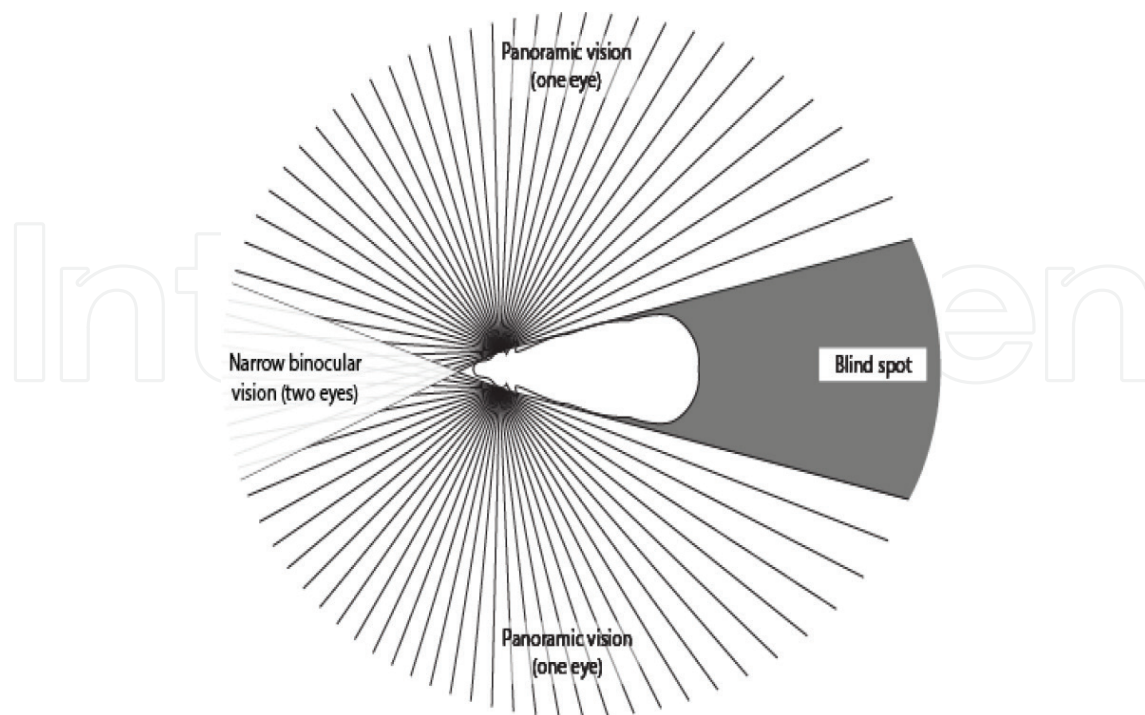


Figure 1. Vision field. Adapted from Krohn et al. [2].

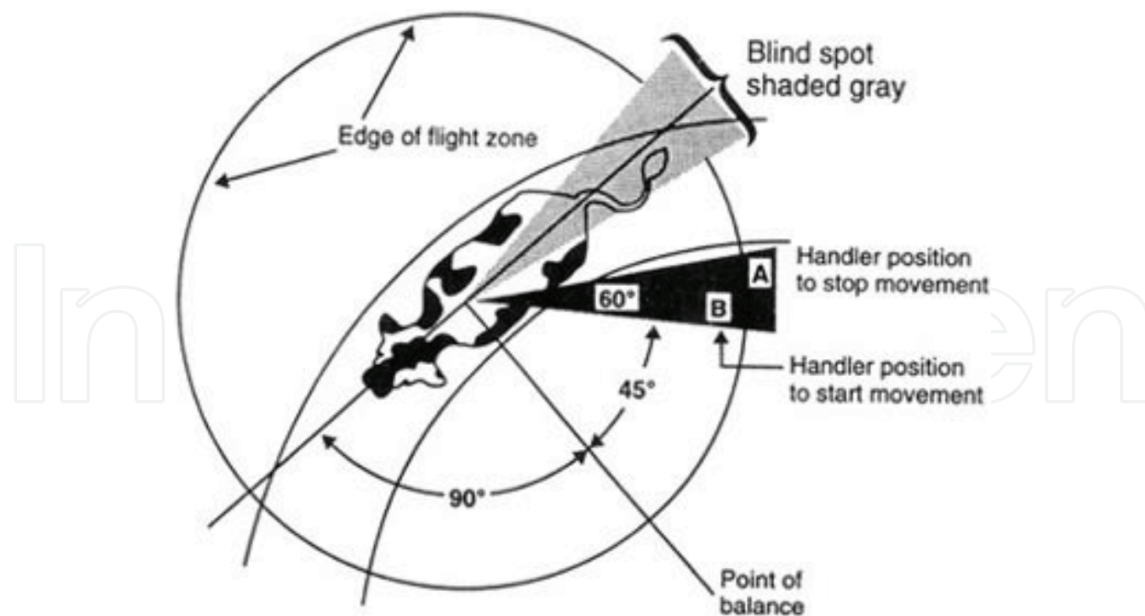


Figure 2. Bovine flight zone and balance point. Adapted from Grandin [25].

According to Grandin [25], handlers must work stay at the edge of the flight zone to move animals calmly and easily. When the handler wants the animal to move forward, it is necessary to position himself within the flight zone and in a caudal position from the balance point to an angle of 45° (point B). The positioning even more caudal, between 45 and 60° in relation to the balance point (point A), usually results in the displacement stoppage. This would occur because the handler would be approaching the cattle blind zone, causing the animal to turn its head to keep it in its visual field, stopping walking. If the animal does not stop, it will walk in circles. When the handler positioning is more frontal to the balance point, animal usually moves backward. However, it is worth mentioning that the flight zone and the balance point are dynamic and always change with the movement of the handler and the animal.

Thus, natural taming is a method that the handler decreases the animal flight zone and allows minimal stress cattle management. However, the natural taming aim is not to eliminate the flight zone, as it is indispensable for the animal movement in an adequate management.

2.5. Traditional taming X natural taming

Cattle are treated as wild animals in traditional taming. The pain is used to obtain cattle responses and allows them to impose their will on the trainer. In addition, this method intended to modify behavior through intimidation and fatigue and employs mechanical procedures based on repetition without reflection.

The cattle present stress and react to aversive situations modifying their behavior when subjected to isolation, pain, sudden noise or fear. This fear can generate an aggressive attitude and an attempt to escape. Fear is a highly stressful factor and can elevate stress-related hormones, such as noradrenaline, adrenaline, and cortisol, to levels higher than many adverse physical factors such as animal's housing [26].

The cattle natural taming is based on the behavior observation and the animal relation with the environment that they are inserted. It is an interaction method with cattle based on respect and communication in a language that the animal can understand, instead of using fear, intimidation and pain. This technique consists of a long, but useful, process of teaching the cattle by means of handler confidence. Therefore, animal makes the movements by his will and not because he is obliged. Many repetitive exercises are used, conditioning the animal in a gentle and progressive manner, without the use of force and pain, to obtain the desired commands. It is an activity that requires patience, bringing good results, better than those achieved through traditional taming, which can cause many traumas.

The difference between taming methods is not just to give reward or not, but to do it when it is deserved. It is essential to be calm as possible, but powerful when necessary. In traditional or natural taming, the movements and responses that we expect from cattle are the same, but the difference is in the way we ask for the movements.

2.6. The cattle learning process during the natural taming

It is necessary to learn how to communicate with cattle to taming and manage adequately these animals, listening and respecting them to establish leadership and teach to follow our commands. For this, it is indispensable to understand how bovines learn, and, in this way, the method can be applied in all types of management and situations. This still prevents the learning and practice of bad habits that are not proper to the animal behavior.

According to Frazer and Broom [27], the learning is defined as the acquisition of knowledge through practical experiences after a situation and its repetition. Learning results in a permanent change in animal behavior in order to respond adequately to the command proposed. The cattle learning during the process of natural taming is established when we create a stimulus and, if the animal chooses the correct answer, we immediately interrupt that stimulus.

Then, learning is reinforced with repeated situations that make the animal to understand the command that must be accomplished. It is not a tireless sequence of irrational repetitions that will determine learning, but a sequence of repetitions that will make the animal be able to reflect and choose the best action. The learning can result in a creation of habits and automatic responses. The habits formation can be accelerated with repetitions during the training, being very effective the schedules with repetitions of a task and interposed with moments of relax.

It is important to reward all cattle efforts when they do what we ask for. With positive reinforcement, the attitude is followed with a nice reward soon after the desired response. Reinforcement is a word widely used in learning theory and taming. It is characterized by increasing or decreasing the possibility of behavior associated with a given situation. Delayed reward is not effective because the animal is not able to make the association between the reward and the attitude. A good example is to caress the back, belly, and perineum region and walking away quietly, indicating that you do not cause damage and so will be emphasizing the correct behavior. It is the commitment to serve us that generates retribution, not the perfect execution of the movement. How greater is the positive reinforcement, more quickly is the adaptation to the habit.

But, in taming, part of the training is performed with negative reinforcement, which should not be confused with punishment, since this type of reinforcement is not associated with violence, punishment or pain, as in traditional taming [28]. Negative reinforcement is defined as the removal of something that bothers the animal to produce the expected response at the time the desired task is performed. This reinforcement occurs during the undesirable behavior and not after it and must stop at the exact moment when the wrong answer ends and the right answer starts. An example of a negative reinforcement would be to maintain the pressure on the halter rope until the animal takes a step forward, when we relieve the rope pressure, demonstrating to the animal that it has made the right decision.

The retribution with the takedown of the stimulus from each advance, no matter how small the advance is, is an incentive for cattle to commitment more and more to seek the right response and thus comfort.

Punishment is a painful stimulus after an unwanted attitude, resulting in pain. When a punishment is performed, the correct task or response will not be tied to the animal's memory and the fear will be present, which does not allow establishing a trust relationship between man and animal. Therefore, punishment should be avoided in taming [29].

2.7. The relationship between man and animal: desensitization

A very important practice in natural taming is the animal desensitization, in which various stimulus and objects are used to learn and create habits [30]. This makes sounds, objects, animal's housing and situations that, at first, seem to bother cattle become routine.

First, the flight zone must be established for the animals that are training, and the delimitation of this area allows the adoption of methods that allow the approach or the distance, depending on the reactivity of each animal. The reduction of the flight zone should be carried out with the approximation, using ropes and swabs, generating gain of animal confidence and performing the desensitization (**Figure 3**).

With gradual desensitization, the animal realizes that the man's presence is not negative and allows the approach and the physical contact. The physical contact allows to please the animals with caresses and brushing. These desensitization actions allow contact with the udder and hind limbs (**Figure 4**), which facilitates the management of cows and heifers and facilitates the process of adaptation of these animals to the milking parlor. These desensitization actions allow contact with the udder and hind limbs (**Figure 4**), which facilitates the management of cows and heifers during the process of adaptation of these animals to the milking parlor.

Positive interaction between men and cattle results in benefits for both, since establishing confidence reduces the risk of accidents, promotes animal welfare and may increase milk and meat production.

After the approach and direct contact with the animals, we must move on to the next training phase. At this stage, the animals received halters and learn to be guided by the handler, they also learn how to stand in the right way and receive daily operations such as bathing and brushing (**Figure 5**).



Figure 3. Reduction of flight zone and gradual approach during the process of natural taming using ropes and swabs. Source: Nilson Dornellas de Oliveira.



Figure 4. Desensitization of the udder and hind limbs. Source: Nilson Dornellas de Oliveira.



Figure 5. Confidence established. Source: Nilson Dornellas de Oliveira.

3. Conclusions

Natural taming is gentle for bovine, and its principle is based on no violence. The animal is dominated by patience, by caring, by cautious approach, by progressive and by repetitive lessons. In taming process, we always create favorable and unfavorable situations for the cattle to seek their comfort. If it makes the right choice, we usually suspend the stimulus. We should never forget to positively reward the right choices with resources such as rest, caress and food. The training must have good quality, not necessarily be long and time-consuming, prioritize the quality of the work, not the quantity.

Author details

Diogo G. Jayme¹, Nilson D. Oliveira², Cristiano G. Jayme³, Lúcio C. Gonçalves¹, Joana R. Glória¹, Telma Martins¹, Ana Luiza C.C. Borges^{1*}, Ricardo R. Silva¹ and Vinicius S. Raposo⁴

*Address all correspondence to: analuzavetufmg@gmail.com

1 Federal University of Minas Gerais, Belo Horizonte, Brazil

2 Agricultural Development Center, Florestal, Brazil

3 Federal Institute of Minas Southeast, Rio Pomba, Brazil

4 Federal Institute of Minas, Bambuí, Brazil

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