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BEHAVIORAL PATTERNS OF GOATS

S. Seçkin TUNCER[1*], H. Deniz ŞİRELİ[2], Ali Murat TATAR[2]

[1]Depertmant of Plant and Animal Production, Vocational School of Ozalp, Yuzuncu Yil University, Van, Turkey
[2]Department of Animal Science, Faculty of Agriculture, Dicle University, Diyarbakır, Turkey
*Corresponding author: selcukseckintuncer@gmail.com

Abstract

Goat is one of the species widespread raised among the domestic animals. Goats are raised in many different environments almost everywhere in the world. It is important to have knowledge relating to goat and other livestock behavior to ensure better health care, nutrition and environment conditions. Knowledge and interpretation of animal behaviour will also enable a rise in yield levels. The rise will provide income to farmers and protein to consumers. The position of the animal in the social hierarchy also affects productivity. In this sense, an animal can be assumed to be unproductive due to being lower in the social hierarchy. Knowledge of animal behavior is important for safety and for decreasing the stress on both the producer and the animal. In this way, animal from being excluded from breeding stock, it may be incorporation again.

In this review, the aim was to reveal the various types of goat behavior in order to perform the raising of goat farming easily and improve yield.

Keywords: *Goat, Behavior patterns*

Introduction

Living organisms live in harmony with their environment. Organisms' reaction to the changes around them, and the behavious exhibited when living organsms encounter each other are subjects that should be studied.

Ethology (the science of behaviour): It is the branch of science which studies the behaviour of living organisms in their natural environments.

Stimulus: Physical, chemical, and biological changes that occur in the internal or external environment and can cause a reaction in the living organism.

Reaction: The response given by effector organs to stimuli. Behaviour is a result of stimuli and reactions.

Behaviour: It is the whole of activities which the organism brings about in response to stimuli received from the internal and external environment. Behaviour helps the living organism find a mate, water, food, and shelter or avoid unfavorable environmental conditions (enemies, scarcity, fire, flood, etc.). Behaviour can be studied in thee groups which are inherent behaviour, learned behaviour, and social behaviour (Anonymous, 2016).

Knowledge about animal behaviour is important for raising the productivity of domesticated species that are cultivated as well as for optimizing the welfare of animals. Behaviour is a very important criterion in evaluating animal welfare (Akcapinar and Ozbeyaz, 1999; Unal, 2004; Yakan et al., 2007). The position of the animal in the social hierarchy is known to have an influence in their productivity. In this sense, an animal can be assumed to be unproductive due to being lower in the social hierarchy. In order to prevent these animals from being excluded from breeding stock, it would be beneficial to consider the ranking in social hierarchy as an environmental factor in breeding programs. Variations are observed in the nature and levels of aggressive behaviour observed in animals. Studies on animal

temperament are required which study aggressive behaviour of animals on an individual basis, in order to determine these variations in breeding efforts (Tolu and Savas, 2006).
In this review was undertaken to be compiled some behaviour characteristic of goats (Grazing and watering, modes of social, sexual, parturition and maternal, abnormal sexual behaviours).

Factors which influence animal behaviour

Genetics: Genetics plays an important role in animal behaviour. Many behaviours of animals of genetically similar species are similar.
Environment: Some environmental factors which influence animal behaviour are:

- Periods of high and low environmental temperature
- Day length (photoperiod) is influential in the goat entering the mating season.
- The availability of feed - The amount and type of available coarse feed influences grazing models.
- Social grouping - The size of the social group, the age of its members and the sex of animals influences behaviour.
- Behaviour of humands - Animals usually respond with a docile reaction to kind treatment and a combative one to harsh treament by their caretakers.

Domestication: The selection of brood animals with economically significant characteristics for the sake of profitable production has caused these species to exhibit different behaviour than their ancestors. Today, most farm animals live in more comfortable environmental conditions that are controlled by humans.

Physiology: Nervous and endocrine systems play an important role in animal behaviour. The nervous system receives, processes, and stores information received from external stimuli. The endocrine system creates important influences on behaviour via hormones.

Sensory systems: Animals receive information ceated by the stimuli received via their visual, auditory, olfactory, taste, and tactile senses. The capacities of these systems for receiving and processing information varies among species. Generally, information received from multiple sensory systems are used to generate an appropriate response.

Modes of behaviour in goats

1. Grazing and watering behaviour: Daily feed ingestion activities in goats comprise 1/3 of all activities. Although goats ingest feed more rapidly than sheep, their grazing period takes longer than sheep. The reason for this is that they are excessively selective and mobile while grazing (Ngwa et al., 2000). Since front incisors in goats have a higher outward inclination, they can gnaw tree barks and trunks. They detach grass with the aid of their tongues and front incisors, and complete their grazing behaviour by shredding them between their teeth (Yakan et al, 2007).
Goats conduct their watering behaviour in the form of sucking. As is the case in all animals, water requirement in goats varies according to the variety and condition of feed, and lactation and pregnancy status. Water intake in goats increased at increased environmental temperature, and during periods such as during pregnancy and lactation (Haenleinet et al., 1992). Goats mostly graze at lower and flat places, but they also like to roam and graze at steep hillsides and rocky inclines. They are also capable of treading 14-15 km a day at the pasture. Goats can take advantage of low quality pastures, maquis and bushes. They can stand on their rear legs and eat the sprouts, buds, and leaves on the branches of leaves (Schwartz, 1981). There are many factors which influence the grazing period. These are respectively: climate conditions, the quality of the pasture where the animals graze, live weight, race, size of herd, age, health condition, the condition of the goat's hair cover and the parasite status, and many other factors. During periods where air temperatures increase, goats deliberately decrease their intake of feed to compensate for heat stress. They tend to graze more during early morning

and late evening during warm seasons (Yakan et al., 2007). Furthermore, the central and peripheral nervous systems as well as hormones are also known to have an influence on the grazing behaviour of goats (Hafez and Hafez, 2000). Since adult goats are better able to distinguish the weeds to which they are accustomed, and that are nourishing they can obtain them in a shorter period of time than young goats. There are also variations between races with respect to grazing period. For instance, goats that are bred for angora yields graze for longer periods as compared to milk goats (Quick and Dehority, 1986; Hoste et al., 2001).
Goats display selective behaviour toward their favorite plants while grazing at the pasture. The taste and smell of plants plays an important role in their selection. Another factor which is influential in the selection of feeds at pasture is the nutrient and toxic content of plants. During studies, goats have been observed to have a higher preference for plants with high nutritious content. Physiological conditions such as lactation and pregnancy are also influential in goats' feed preferences (Wittenberger, 1981; Hoste et al., 2001). Pregnancy and lactation have been reported to increase the total daily time of feeding, the frequency of feeding, the total daily time of rumination, and the frequency of rumination (Wittenberger, 1981).

2. Modes of social behaviour in goats:

2.1. Hierarchical behaviour: Goats are animals with herd instincts. Their relationships with other individuals within the heard leads to the formation of a hierarchical structure among them. This condition which we call social hierarchy allows them to live together. Factors such as temperament, live weight, and the presence of horns play an influential role in the social hierarchy amongst goats. Especially the presence of horns has a significant place in determining the individual's place within the herd. Animals that are placed high in the hierarchy fully exhibit, grazing, resting, mating, and general activity behaviour (Lickliter, 1984; Shackleton and Shank, 1984; Craig, 1986).

2.2. Agonistic (combative) behaviour: Agonistic behaviour in goats are behaviours such as attacking, escape, threatening, and defense. The reason for these behaviours in goats is the instinct to protect both themselves and their food sources (Mc Glone, 1986). Agonistic behaviour is observed to be 50% higher in males. The most important cause of this is the fact that females have no horns or weak horns(Unal and Akcapinar, 1994). Agonistic behaviour modes in goats are observed mostly in the form of attacking, threatening, and submission. Knowledge of these behaviours is important for breeding and handling of animals (Shackleton and Shank, 1984; Barroso et al., 2000; Yakan et al., 2007).

2.2.1. Threatening behaviour: As the number of living creatures in a population rises, competition for food, living space, and mate increases. Competition leads to theemergence of social hierarchy among animals which make up the group. The individual which proves its superiority has the chance to meet its vital needs before others. These individuals exhibit symbolic threatening behaviour. Animals which are dominant within the herd try to have their superiority recognized by other animals through certain sounds and motions to express their intent to the other animal (Anonymous, 2016).

2.2.2. Attacking behaviour: It is perhaps the most important of agonistic behaviours. Environmental factors have a fairly high influence in the emergence of these behaviours. We could list herd size and physical amenities (shelter, feed, area for water etc.) among these factors. For instance increased herd size can increase attacking behaviour since it will limit food, water, and shelter areas (Unal and Akcapinar, 1994; Yakan et al., 2007). Attacking behaviour also increase with sexual maturity. These behaviours mostly manifest in the form of head-butting (Craig, 1986; Barroso et al., 2000; Yakan et al., 2007).

2.2.3. Submissive Behaviour: This mode of behaviour mostly manifests in the form of accepting defeat following threatening and aggressive behaviour (Yakan et al., 2007).

3. Sexual behaviour in goats: In goats, these can be listed as courting, estrus, mating, and pregnancy-related behaviour. Factors such as sex, race, feeding, and day length are important in terms of behavioural differences. For instance in bucks this activity emerges most during periods when day length shortens (Hafez and Hafez, 2000; Imwalle and Katz 2004).
Female goats in their mating season secrete some chemicals called pheromones from their urine and vaginal secretions in order to increase the interest of the opposite sex. Male goats which detect this pheromone extend their head upwards, back their upper lip, which is called the Flehmen movement. In some cases male goats cause an erection in their penis and urinate toward their front legs, and can secrete pheromones from their own body by smelling this urine kokmasıdır (Delgadillo and Malpaux, 1996; Hafez and Hafez, 2000; Imwalle and Katz, 2004).
3.1. Estrus behaviour in goats: Goats which approach rutting or are already rutting exhibit a marked decrease in their feed consumption and milk production. They are quite mobile during this period, constantly moving their tail while bleating and seek male goats within the herd. They constantly pounce on other goats and allow other goats to pounce on them. When they meet with the buck, they let him pounce on them. Buck on the other hand secrete odors to attract goats in rut. During this period bucks are aggressive and display a constant wish for mounting. They also sniff and lick the vaginal section of the goat and make grunting sounds. They kick the sides of the goat with their front legs (Chemineau 1983; Cupps, 1991).
3.2. Buck goat effect: Buck that had been isolated from the goat herd for a long time (4-6 weeks) prior to the addition of male goats are observed to influence the reproductive mechanisms of goats upon being re-introduced into the herd through pheromones they secrete from their skin and around their eyes, and female goats are similarly observed to influence buck through some pheromones in their vaginal secretions and urine (Hafez and Hafez, 2000; Martin, 2001; Ungerfeld, 2003).
3.3. Courting behaviour in goats: Courting behaviour is of great importance for successful mating in goats. These behaviours include the male goat sniffing the rutting female's perineal region; and hitting the goat's flank with front legs and making noises in the meantime. Female goats respond to these behaviours by urinating and by moving forward. The male goat on the other hand sniffs the urine, sometimes licks it and shakes his head from side to side while making the Flehmen movement. Courting behaviours that are rarely seen in female goats is to sidle up to the male, trying to hide under his chest, and leaning her body along the male goat's flank (Imwalle and Katz, 2004; Yakan et al., 2007).
3.4. Mating behaviours in goats: The male goat pounces the goat which he had found to be in rut, and exhibits the mounting behaviour by grasping it firmly from its buttocks. Mating is achieved through repetitive pushing motions to the rear of the goat. Ejaculation occurs after the mounting movement and the male goat unmounts from the goat and concludes the mating (Kilgour and Dalton, 1984).

4. Parturition and maternal behaviour in goats: The behaviour of during birth period can be studied under three headings. They are prenatal, during the birth and postnatal behavior (Lickliter, 1984; Kilgour and Dalton, 1984; Craig, 1986; Haenlein, et al, 1992). Major behaviours observed in goats before birth are a decrease in the desire to feed, keeping the male goat away, slower movements, and frequent urination (Kaymakci, 2013). Also moving away from other goats (76%), discomfort and frequent changes in position (72%), frequent bleating (57%), chasing away or head-butting animals in its proximity, and aggressive behaviour can also be observed (42%) (Yakan et al., 2007). Behaviour during the birth itself are the following; the period between the onset of uterine contractions in the goat and the expulsion of the kid are defined as birth, and occur over a period of approximately three hours

without help in a standing or prone position (Cupps, 1991; Hafez and Hafez, 2000; Kaymakci, 2002; Yakan et al., 2007) .

Postnatal behaviour and the relationship between the mother goat and kid are behaviours that begin immediately after birth. Maternal bonding begin with birth and end with the weaning period. Age, number of births, the kid's need for nutrition, race, birth type, and stimulus by the kid (warmth, sucking, moving) are influential on mothering behaviour. The mother goat immediately beginning to lick her kid and allowing the kid to suckle herself are the first indications of mothering behaviour (Unal and Akcapinar,1994; Kaymakci, 2002).

5. Abnormal sexual behaviours in goats

5.1. Homosexuality: Homosexuality is a behaviour that is observed among domesticated sexually mature male mammals and manifests in the form of mutual mounting behaviour. Isolation of male animals from female promotes homosexual behaviour. When males in this condition are once again introduced to females heterosexuality emerges again (Kaymakci, 2002).

5.2. *High sexual activity*: High sexual activity is more than normal numbers of mounting, mating, and ejaculation by male mammals (Kaymakci, 2002).

5.3. Low sexual activity: Low sexual activity is less than normal numbers of mounting, mating, and ejaculation by male mammals. This condition is always observed in the form of an absence of desire to mount or mate.

5.4. Masturbation: Masturbation is erection or ejaculation of male mammals on their own (Kaymakci, 2002).

Conclusion

Goat breeding is an animal husbandry activity that has economical significance. Goats are the most important farm animals which can consume many foods that are hard to digest, converting them to animal production. Furthermore, goat is also an indispensable source of income with its ability to adapt to highly varied geographical regions and climate conditions. Knowledge and interpretation of animal behaviour will also enable a rise in yield levels. The increasing number of studies on the behavior of goats and informing to farmers, it will be rendered more profitable and attractive in goat breeding.

In conclusion, it should be known of goats behavior patterns for economically goat breeding . In this way, animal products will be increased. This increase will provide income to farmers and protein to consumers.

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