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PRELIMINARY OBSERVATIONS ON BEHAVIOUR OF LIMOUSINE AND HIGHLAND CATTLE

Summary. The aim of the study was to characterise behaviour of limousine and highland cattle kept on permanent grassland on a farm in the Wielkopolska region. Investigations consisted of observations conducted on the behaviour of animals in two herds of limousine and highland cattle during the four seasons of the year. Frequency was recorded for the following activities performed by animals: food consumption, drinking of water, rumination, resting (lying down), rubbing, allogrooming, fights and excretion (urine, faeces). The second stage of the study comprised detailed descriptions of behaviour of animals on the pasture. Observations were conducted on a herd composed of dams, juvenile animals (up to seven-eight months old) and a bull.

Key words: cattle, limousine, highland, behaviour

Introduction

Beef cattle breeding in Poland is a new direction in animal production, initiated to a considerable scale in the 1990's. In 1994 in Poland a program for the development of beef cattle breeding was established. It was decided that the state should support this sector of animal production by subsidizing cows registered in herd books and young bulls of beef breeds qualified for breeding.

Among several breeds imported to Poland in the years 1994-1996 the size of population of limousine cattle increased the fastest and it accounts for approximately 41% total beef cattle population (NOGALSKI 2005). This results from high performance value of this breed. Scottish highland breed, thanks to its unique beauty and exceptional adaptability have an effect on the landscape of regions, while culinary value of meat produced by the breed, which is one of the oldest cattle breeds, is also of importance.

Evaluation of behaviour is one of the methods used in the determination of the level of welfare of animals. Adverse environmental conditions may lead to pathological be-

havioural changes, which diverge from the type of behaviour typical of the species and sex of animals (KOWALSKI 2005).

Behaviour of animals, including cattle, is genetically determined. Behavioural traits are quantitative and thus their phenotypic value depends not only on the genotype, but also is affected by environmental conditions (LITWIŃCZUK and SZULC 2005).

Behaviour of animals has an effect on their performance and even on the housing and technical facilities of farming buildings. Frequently welfare is associated with requirements concerning animal management standards. However, these standards specify only the requirements in terms of minimal conditions, which are to provide foundations of animal welfare (HERBUT 2005).

Ethological studies on farm animals are necessary in view of the increasing trend for enlargement of herds and maintenance of a large number of animals per unit area (DAWKINS 1990, JEZIEWSKI 2002, BOGNER 2004).

The aim of the study was to characterize behaviour of Limousine and Highland cattle kept on permanent grassland on a farm in the Wielkopolska region.

Material and methods

Experimental material comprised a foundation stock of beef cattle of the limousine breed (20 head) and the highland breed (15 head) kept on the Rudki farm in the years 2006-2007. Winter animals were kept in loose housing and in the grazing period on pasture with access to a barn or roof shelters.

Studies consisted in observations conducted on behaviour of animals in two herds (depending on the breed) in selected hours of the day in the period of summer, autumn, winter and spring. The frequency was recorded for the following activities performed by animals: food consumption, drinking of water, rumination, resting (lying down), rubbing, allogrooming, fights, excretion (urine, faeces). Results of observations were collected in four tables. The second, descriptive stage of the study, comprised detailed descriptions of behaviour of animals kept on the pasture. Observations were conducted on a herd composed of dams, juvenile animals (up to seven-eight months of age) and a bull. In order to realize assumed research tasks the behavioural inventory checklists were used, documenting behaviour of animals in the herd. The checklist concerning behaviour of animals in the herd included: the senses, ability to learn, communication, individual distance, hierarchy in the herd, behavioural responses to the introduction of a new member to the group, social grooming behaviour, diurnal rhythm, reproduction, parturition, uptake of colostrum, weaning, reproduction disorders, strategies for selection and herd replacement, management conditions, grooming measures, abnormal behaviour, behaviour connected with the presence of humans and occurring changes in the surroundings.

Breeding work in the herd was based on male material originating from the best bulls. Calvings of heifers and cows in both breeds were distributed uniformly throughout the year. Calves were nursed by dams for approximately seven-eight months. After that time calves were weaned and included in the herd of heifers and bull calves. Heifers constituted mostly breeding material assigned to increase the population of the founda-

respectively, and in the evening hours (19⁰⁰-21⁰⁰), i.e. 60.0 and 33.3%. The lowest number of animals of both breeds (25% limousine and 6.6% highland) performed this activity between 9⁰¹ and 10⁰⁰. This was most probably caused by high air temperature. Drinking of water by animals irrespective of their breed was distributed relatively uniformly during the day. The animals drank water least often between 9⁰¹ and 10⁰⁰. Simultaneous resting and rubbing on different objects on the pasture and runs was observed at a slight proportion, however, if such behaviour occurred, it was mainly between 11⁰¹ and 12⁰⁰. At the same time also the only fights – clashes between animals were observed in both breed groups. Considerably more frequent, irrespective of the time of day, excretion of urine and faeces was recorded for highland animals than it was in case of the limousine breed.

Table 2 presents results of observations of behaviour in the same groups of animals in the autumn period. Similarly as in the summer, also in this season the largest number of animals of both breeds consumed food in the morning and evening, while the fewest did so around noon. Drinking of water by limousine animals was most frequent in the morning hours, while in case of animals of the highland breed it was around noon (11⁰¹-12⁰⁰).

Table 2. Results of observations on behaviour of animals in a herd of limousine and highland cows in the autumn period

Tabela 2. Wyniki obserwacji zachowania się zwierząt w stadzie krów ras limousine i highland w okresie jesiennym

Hours of observations	N	Food consumption		Drinking of water		Rumination		Resting / lying down		Rubbing		Allolicking		Fights		Excretion (urine, faeces)	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Limousine																	
8 ⁰⁰ -9 ⁰⁰	20	8	40.0	2	10.0	5	40.0	2	10.0	-	-	-	-	2	10.0	1	5.0
9 ⁰¹ -10 ⁰⁰	20	11	55.0	1	5.0	6	30.0	-	-	-	-	1	5.0	-	-	1	5.0
10 ⁰¹ -11 ⁰⁰	20	4	20.0	1	5.0	14	70.0	-	-	-	-	1	5.0	-	-	-	-
11 ⁰¹ -12 ⁰⁰	20	-	-	-	-	13	65.0	1	5.0	2	10.0	-	-	2	10.0	2	10.0
19 ⁰⁰ -21 ⁰⁰	20	11	55.0	1	5.0	3	15.0	2	10.0	-	-	3	15.0	-	-	-	-
Highland																	
8 ⁰⁰ -9 ⁰⁰	15	8	53.3	1	6.7	2	13.3	2	13.3	-	-	1	6.7	-	-	1	6.7
9 ⁰¹ -10 ⁰⁰	15	3	20.0	-	-	7	46.6	-	-	1	6.7	1	6.7	2	13.3	1	6.7
10 ⁰¹ -11 ⁰⁰	15	1	6.7	1	6.7	11	73.3	2	13.3	-	-	-	-	-	-	-	-
11 ⁰¹ -12 ⁰⁰	15	1	6.7	2	13.3	6	40.0	3	20.0	2	13.3	-	-	-	-	1	6.7
19 ⁰⁰ -21 ⁰⁰	15	6	40.0	1	6.7	4	26.6	1	6.7	-	-	1	6.7	-	-	2	13.3

Based on the observations of behaviour of animals in the free stall barn with access to a run in the winter period (Table 3) it may be stated that the largest number of animals of both breeds consumed food at 8⁰⁰-9⁰⁰ (85% limousine and 86.7% highland)

Table 3. Results of observations of behaviour of animals in a herd of limousine and highland cows in the winter period

Tabela 3. Wyniki obserwacji zachowania się zwierząt w stadzie krów ras limousine i highland w okresie zimowym

Hours of observations	N	Food consumption		Drinking of water		Rumination		Resting / lying down		Rubbing		Allolicking		Fights		Excretion (urine, faeces)	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Limousine																	
8 ⁰⁰ -9 ⁰⁰	20	17	85.0	–	–	1	5.0	–	–	–	–	–	–	2	10.0	–	–
9 ⁰¹ -10 ⁰⁰	20	4	20.0	4	20.0	12	60.0	–	–	–	–	–	–	–	–	–	–
10 ⁰¹ -11 ⁰⁰	20	2	10.0	2	10.0	13	65.0	–	–	1	5.0	2	10.0	–	–	–	–
11 ⁰¹ -12 ⁰⁰	20	–	–	2	10.0	9	45.0	3	15.0	–	–	2	10.0	2	10.0	2	10.0
19 ⁰⁰ -21 ⁰⁰	20	19	95.0	–	–	1	5.0	–	–	–	–	–	–	–	–	–	–
Highland																	
8 ⁰⁰ -9 ⁰⁰	15	13	86.7	–	–	2	13.3	–	–	–	–	–	–	–	–	–	–
9 ⁰¹ -10 ⁰⁰	15	4	26.6	2	13.3	7	46.7	–	–	–	–	–	–	1	6.7	1	6.7
10 ⁰¹ -11 ⁰⁰	15	2	13.3	2	13.3	8	53.3	1	6.7	1	6.7	–	–	1	6.7	–	–
11 ⁰¹ -12 ⁰⁰	15	2	13.3	–	–	6	40.0	2	13.3	2	13.3	2	13.3	–	–	1	6.7
19 ⁰⁰ -21 ⁰⁰	15	11	73.3	1	6.7	2	13.3	–	–	1	6.7	–	–	–	–	–	–

and in the evening (95% limousine and 73.3% highland), while the fewest – before noon. Most frequently drinking of water by limousine cattle was observed between 9⁰¹ and 12⁰⁰, while highland animals did so at 9⁰¹-11⁰⁰ and in the evening hours. At that time of year representatives of analysed breeds most willingly rested first of all at noon. Moreover, much more frequent rubbing on different objects was observed in the highland group, while limousine animals more willingly licked and groomed one another.

Observations recorded in the spring period (Table 4) confirmed the previously observed trend for the consumption of food by animals of both analysed breeds in the morning and evening hours, while they were least interested in that activity in the noon hours. In the group of limousine animals the largest number (15%) drank water between 10⁰¹ and 11⁰⁰, while in Scottish cattle it was between 11⁰¹ and 12⁰⁰ (20%). In the population of limousine animals resting (lying down) occurred uniformly during the hours of observations, while representatives of the highland breed participated in that activity most willingly between 10⁰¹ and 12⁰⁰. Animals of this breed much more often rubbed their bodies on different objects, were engaged in allolicking and urinated and excreted faeces. Fights – clashes in the group of limousine cattle in the spring period were recorded in the morning and noon hours, while in population of Scottish cattle this behaviour occurred also in the evening hours.

When analysing rumination time in the course of all seasons of the year (Tables 1-4) it was found that it was most intensive in the late morning hours between 10⁰¹ and 12⁰⁰.

Table 4. Results of observations of behaviour of animals in a herd of limousine and highland cows in the spring period

Tabela 4. Wyniki obserwacji zachowania się zwierząt w stadzie krów ras limousine i highland w okresie wiosennym

Hours of observations	N	Food consumption		Drinking of water		Rumination		Resting / lying down		Rubbing		Allolicking		Fights		Excretion (urine, faeces)	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Limousine																	
8 ⁰⁰ -9 ⁰⁰	20	11	55.0	1	5.0	3	15.0	2	10.0	-	-	-	-	2	10.0	1	5.0
9 ⁰¹ -10 ⁰⁰	20	11	55.0	-	-	7	35.0	1	5.0	-	-	1	5.0	-	-	-	-
10 ⁰¹ -11 ⁰⁰	20	4	20.0	3	15.0	13	65.0	-	-	-	-	-	-	-	-	-	-
11 ⁰¹ -12 ⁰⁰	20	2	10.0	1	5.0	13	65.0	1	5.0	1	5.0	-	-	1	5.0	1	5.0
19 ⁰⁰ -21 ⁰⁰	20	13	65.0	-	-	4	20.0	1	5.0	-	-	2	10.0	-	-	-	-
Highland																	
8 ⁰⁰ -9 ⁰⁰	15	9	60.0	2	13.3	-	-	1	6.7	-	-	1	6.7	-	-	2	13.3
9 ⁰¹ -10 ⁰⁰	15	2	13.3	-	-	8	53.3	-	-	-	-	2	13.3	2	13.3	1	6.7
10 ⁰¹ -11 ⁰⁰	15	2	13.3	1	6.7	10	66.7	-	-	2	13.3	-	-	-	-	-	-
11 ⁰¹ -12 ⁰⁰	15	1	6.7	3	20.0	6	40.0	3	20.0	1	6.7	-	-	-	-	1	6.7
19 ⁰⁰ -21 ⁰⁰	15	5	33.4	2	13.3	3	20.0	2	13.3	-	-	2	13.3	1	6.7	-	-

Highland cattle were an exception in this case, as in the summer period they ruminated more frequently in the evening hours (Table 1). Resting in limousine animals was observed mostly in the morning and evening, while in mountain cattle originating from Scotland it was observed with highest intensity in the noon hours. Allolicking was distributed uniformly throughout the day, however, in the observed group of highland cattle it was more evident. Fights – clashes took place most often in the late morning hours and much more often they occurred, irrespective of the season of the year, in the group of highland animals.

When analysing specific behaviour of animals based on collected information it results from the prepared behavioural inventory chart that both limousine and highland cattle, depending on age, showed considerable interest in new objects. In calves, irrespective of their breeds, relatively high hesitation was found. Cows and calves of the limousine breed more willingly approached known and recognizable sounds than they did to unfamiliar sounds. Also in the population of highland cattle, both cows and calves willingly approached the source of sounds, however, a markedly greater care was observed for dams of this breed, which was manifested in the chasing away of a potential intruder (protection of the young) by dams. Bulls of these breeds in such situations showed much bigger mistrust, which was manifested by a markedly bigger distance from the sound source. In the opinion of MARCINKOWSKI and MACIOLEK (2006), all sense organs in cattle are well-developed, animals use them when searching for feed,

orientation in space and in social contacts. Cattle distinguishes colours and simple shapes, but the capacity to focus due to the location of the organ of sight in this species is slight. Those authors were also of an opinion that cattle recognize workers on the farm handling them. According to NEJA and BOGUCKI (2007) animals get used to a new person or object after approximately 7-10 days, with older animals requiring more time than younger ones. According to those authors any changes, i.e. a change of housing, location of feeding racks, drinkers, unfamiliar devices, cause considerable confusion, shyness and stress in the herd. The first contact with something new is initially limited to observation, sniffing and nudging. In this study in both breeds of cattle problems were observed connected with localization of different types of sounds coming from farther distances. In the opinion of MARCINKOWSKI and MACIOLEK (2006) cattle can determine the location of the sound source within a radius of only 30° and the range of frequency is almost identical as in humans. According to these authors animals of both examined breeds are not very discriminating as far as feeds are concerned. Cattle prefer sweet and sour food, refusing to consume bitter feed. Despite that fact cows are not very picky and eat even spoiled, unpalatable and contaminated food, and the taste of drinking water is of little importance.

In this study high sensitivity to attacking insects was observed for limousine cattle. Scottish cattle showed much less perceptible reactions, which was probably connected with the thick coat of these animals.

The type of ground selected for resting by animals of both breeds was particularly evident in days with high air temperature (summer). Animals chose wet places, both grass and sand located most frequently near drinkers or areas irrigated earlier.

In the course of observations conducted in this study a limited individual distance was recorded between cows and calves, while bulls remained more distant from the other animals in the herd. An evident reaction to the disturbance of the distance included aggression or much more frequently escape. During allogrooming this distance, irrespective of the age and sex of animals, disappeared. On the basis of observations can be concluded that hierarchy in the herds of both breeds was clearly dependent on the sex of the animal, their age, body weight, duration of their stay in the group and temperament. The older and heavier the animals, the higher was their status in the hierarchy. Behavioural reactions to the introduction of a new member to the group were dependent on the age and body weight of the newcomer. Examples may be given here of calves, which in a short time (one-five days) adapted and at the same time were accepted by the other herd members. The younger the animals, the less evident and shorter the reactions were in the observed representatives of both breeds to the appearance of new animals in the group. Pushing away from feeding stations in case of older animals lasted for approximately one week, while in calves it was approximately 24 h. Lying down away from the other herd members in limousine cattle lasted for approximately seven days, while in the highland breed it was even more than seven days. Calves, irrespective of their breed, accepted new animals much faster (up to four days).

In both populations of beef cattle during long-term observations changes were observed in the hierarchy of the herd. This was caused first of all by an increased age, body weight and physical agility of tested animals.

In the course of observations of selected populations of animals it was shown that allogrooming was performed on these parts of the body, which the animals were not ca-

pable of reaching themselves and it was done among animals of the same position in the hierarchy (age and position in the herd of allogrooming animals were similar). Individual distance in these situations did not matter. Most frequently the following parts of the body were licked: the head, neck, back and mouth. The duration of these activities depended on the external conditions and lasted most often up to 2 h in the herd of the limousine breed and approximately 1 h in highland cattle, with these activities being uniformly distributed throughout the day. Moreover, rubbing of animals on tree trunks was also observed, which was classified as self-grooming. This could have been connected with a lack of possibility to use different types of mechanical equipment, e.g. stationary or rotary brushes.

Based on a detailed analysis of the diurnal rhythm in both herds of beef cattle it was observed that animals spent relatively much time resting (lying down). Adult animals in the daily routine devoted approximately 8 h to that activity, while calves did so for 15 h, with adult animals lying down and standing up 15-20 times a day, while calves up to as many as 40 times. Favourite places for lying down in the summer season in case of both breeds included shaded and moist locations near drinkers, while in winter they were sunny locations. Cows and calves of both breeds rested in groups, while bulls rested at a distance. The favourite position during resting was with the head tilted backwards and resting on the back or placed parallel to the back.

Consumption of feed and water by observed animals was most frequently performed in groups. During the day animals of both breeds consumed feed for approximately 8 h, most typically in the morning and evening. They drank water as needed (three-seven times) depending on the temperature and consumed feed.

In both observed herds rumination lasted on average from 5 to 8 h and took place in 15-20 cycles in the sternal recumbent position with the elevated head and one forelimb pulled up under the body.

Within the 24 h cattle spent from 6 to 8 h on movement, depending on their age and weather conditions. During hot temperature locomotory activity intensified in the early morning and in the evening hours. Locomotory activity was also significantly affected by the physiological condition of the animal, cows in oestrus walked much more, while sick animals were apathetic and spent most time recumbent. The frequency of movement during the day was also affected by new objects in the surroundings, curiosity and the condition of being threatened.

In both herds of beef cattle animals were first used in reproduction at the age of 15-18 months. When a cow was in heat, the bull showed anxiety, characteristic yowling and bellowing as well as dominance, which was particularly evident in the highland herd. Cows in this physiological condition were anxious, sensitive to stimuli; moreover, they licked and sniffed other cows, humans and objects. In the course of oestrus such symptoms were observed as a congested and swollen vulva as well as raspberry red colouring of the epithelium. The incidence of oestrus in the diurnal cycle was most evident in the night and early morning hours. Before mounting the bull presses his head and neck to the loin of the cow, which makes her stand motionless. The female during the sexual act was gentle and calm, while in the male nervousness was observed and in case of the highland bull it was even marked aggressiveness.

As it was shown by the results of studies on cattle the behaviour of cows changes several days before parturition. The cow starts to be anxious and refrains from the same

activities as those performed by the rest of the herd. In the course of observations taken within this study it was found that two-three days before parturition the female leaves the herd and goes to a secluded location. The female on a pasture overgrown with trees and shrubs searches for solitude sensing approaching parturition. The duration of parturition varied with heifers calving for a longer time, while in cows parturition typically lasted for 20-30 min. In the analysed population of Limousine cattle cows calved in 99% cases with no assistance, while in heifers it was in 97% cases. No complications were observed in parturition in the herd of highland cattle. Calving pains started 5 to 7 h before parturition, at that time the cow stamped her feet, numerous colics were observed, the cow bellowed, repeatedly stood up and lay down. In the Scottish highland cattle all these symptoms were much more evident. Most frequently the position selected by animals during parturition was lying down on the left side, occasionally the cow stood up. Immediately after calving the female stood up, problems connected with release of placenta were found very rarely in the observed animals.

It was found in this study that dams, irrespective of their breed, bellowed softly at the sight of the calf. She bellowed at it when it was lying and licked it immediately after it stood up. The duration of licking was most frequently approximately 30 min. The calf stood up approximately 1 h after being born and then it started to drink colostrum. In the population of limousine cattle eight periods of colostrum consumption by the calf were recorded, while in the highland herd it was 8-10 times. Later the number of approaches to suckling decreased. Calves were very rarely lost in the herd immediately after parturition. Limousine and highland calves started to consume both herbage and concentrate towards the end of the first week of life. It was observed that the dams protected her calf and its territory, they drove and chased away other animals, since the new member of the herd would be sniffed eagerly by the other herd members. Cows of both breeds protected calves throughout the entire period up to weaning, although it was found that highland cows were more caring and sensitive. The cow was inseparable from her calf from birth to the end of colostrum consumption period. In the course of the next days of life of calf the cow spent much time with it leaving it alone only when using the feeding racks or a drinker. For several weeks after calving dams searched for their calves to feed them, while later this situation was reversed and it was the calf which searched for the dam when they felt hungry.

Calves of both breeds showed willingness to play, which consisted in pushing, chasing, catching others' tails and lying on forelegs. After birth play was an individual activity, while at an older age calves played in groups of two and more. It was observed that in the course of such play they started to establish hierarchy in a given group.

Weaning occurred on the pasture at the age of approximately eight months. Uniform groups were formed of calves according to their sex, age, body weight and intended use. After weaning they were carefully observed for the first several days in order to detect any diseases or disorders. The most frequently recorded diseases in the herd of weaned limousine calves were diarrhoeas, while in highland animals they were diarrhoeas and lung diseases.

In the herd of adult animals of both breeds no diseases preventing mating, fertilization or causing disorders at early pregnancy were recorded.

Throughout the entire grazing period animals had access to roof shelters.

No problems were observed in the examined herd connected with mechanical injury to limbs, e.g. lameness or broken legs. No cornified tissue removal or hoof correction procedures were performed.

In terms of undesirable pathological behaviour of animals the so-called tongue play was observed only in the limousine herd.

Conclusions

1. In both groups of cattle selected for observations the most frequently performed activity during the analysed hours was feed consumption. The biggest number of animals performed this activity, irrespective of the season of the year, between 8⁰⁰ and 9⁰⁰ and between 19⁰⁰ and 21⁰⁰. When analysing rumination time in terms of seasons it was shown that it was observed with highest intensity between 10⁰¹ and 12⁰⁰. Exceptions to this rule were highland animals, which in the summer much more willingly ruminated consumed feed in the evening hours.

2. Irrespective of the analysed season of the year, the population of highland cattle in comparison to limousine animals was characterized by a much more frequent performance of such activities as resting – lying down, rubbing on different objects and allogrooming.

3. In the course of conducted studies a limited individual distance was observed between cows and calves, while bulls were found at a much bigger distance from the other animals in the herd. Reaction to disruption of distance included aggression or escape – moving away from that place. During allogrooming this distance disappeared irrespective of the age and sex. On the basis of observations can be concluded that hierarchy in the herds of both breeds was markedly dependent on the sex of animals, their age, body weight, time spent in the group and temperament.

4. When cows entered oestrus the bull exhibited anxiety, characteristic yowling and bellowing as well as dominance, which was particularly evident in the highland herd. During the sexual act the female was gentle and calm, while in the male nervousness was observed and in case of the highland bull it was evident aggression.

5. It was observed that the female two-three days before parturition left the herd to go to a secluded place. Parturition time varied, with heifers calving longer, while in cows parturition lasted usually for 20-30 min. In the analysed group of limousine cattle cows calved in 99% cases and heifers in 97% cases without any assistance. No complications were observed in parturition in the highland herd.

6. Very early consumption of solid feed by new-born calves was observed in both breeds, which was caused most frequently by curiosity and imitation of behaviour of the dam. It was found that the dam protected her calf and its territory, driving and chasing away other animals.

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WSTĘPNE OBSERWACJE NAD ZACHOWANIEM SIĘ BYDŁA RAS LIMOUSINE I HIGHLAND

Streszczenie. Celem pracy była charakterystyka behawioryzmu bydła ras limousine i highland utrzymywanego na trwałych użytkach zielonych w jednym z gospodarstw Wielkopolski. Badania polegały na przeprowadzeniu obserwacji nad zachowaniem się zwierząt w dwóch stadach bydła ras limousine i highland w okresie czterech pór roku. Obserwowano częstość wykonywanych przez zwierzęta czynności, takich jak: pobieranie pokarmu, picie wody, przeżuwanie, odpoczynek (leżenie), ocieranie, wylizywanie się wzajemnie, walki, wydalanie (moczu, kału). Drugi etap badań polegał na szczegółowym opisie zachowania się zwierząt przebywających na pastwisku. Obserwacje obejmowały stado złożone z: krów matek, młodzieży (do wieku siedmiu-ośmiu miesięcy) i buhaja. W celu realizacji założonych zadań badawczych zastosowano ankietę behawioru – zachowania się zwierząt w stadzie. W obu wybranych do obserwacji grupach bydła, najczęściej wykonywaną czynnością w uwzględnionych godzinach było pobieranie paszy. Najwięcej zwierząt wykonywało tę czynność niezależnie od pory roku między godziną 8⁰⁰ a 9⁰⁰ oraz między godziną 19⁰⁰ a 21⁰⁰. W wyniku analizy czasu przeżuwania w sezonach wykazano, że w największym stopniu zaznaczyło się ono w godzinach między 10⁰¹ a 12⁰⁰. Wyjątek stanowiły zwierzęta rasy highland, które w okresie letnim dużo chętniej przeżuwały pobraną paszę w godzinach wieczornych. Niezależnie od analizowanej pory roku populacja bydła rasy highland w porównaniu ze zwierzętami limousine charakteryzowała się znacznie częstszym wykonywaniem takich czynności, jak: odpoczynek – leżenie, ocieranie się o różne przedmioty i wzajemna pielęgnacja. W czasie prowadzonych badań zaobserwowano mały dystans indywidualny między krowami i cielętami, natomiast buhaje znajdowały się w znacznie większej odległości od pozostałych osobników w stadzie. Reakcją na naruszenie dystansu była agresja lub ucieczka – oddalenie się z tego miejsca. Podczas wzajemnej pielęgnacji dystans ten niezależnie od wieku i płci zanikał. Na podstawie przeprowadzonych obserwacji można wnioskować, że hierarchia w stadach obu ras była wyraźnie uzależniona od płci zwierzęcia, wieku, masy ciała, czasu pobytu w grupie oraz temperamentu. Gdy krowa wchodziła w fazę rui właściwej, buhaj okazywał niepokój, charakterystyczne wycie i porykiwanie oraz dominację, co szczególnie wyraźnie zaznaczyło się w stadzie bydła rasy highland. W czasie aktu płciowego samica była łagodna i spokojna, natomiast u samca zaznaczało się podenerwowanie, a w przypadku buhaja rasy highland zaobserwowano wyraźnie zaznaczoną agresję. Zauważono, że samica na dwa-trzy dni przed porodem oddala się od stada w ustronne miejsce. Czas trwania porodu był różnicowany, jałówki cielily się dłużej, a u krów poród trwał zazwyczaj 20-30 min. W analizowanej grupie bydła limousine krowy cielily się w 99%, a jałówki w 97% bez żadnej pomocy. Nie zaobserwowano komplikacji porodowych w stadzie bydła rasy

highland. Stwierdzono bardzo wczesne pobieranie przez nowo narodzone cielęta obu ras paszy stałej, co najczęściej było spowodowane ciekawością i naśladowaniem zachowań matki. Zaobserwowano, że krowa matka chroniła swoje cielę i jego terytorium, zaganiając je i odpędzając inne zwierzęta.

Słowa kluczowe: bydło, limousine, highland, behawioryzm

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