

Bloat and Acidosis Occurrence in Lori Bakhtiari Ram Lambs in Pasture

Mehdi Moghaddam¹, Yaser Rahimian², Reza Alipoor Filabadi² and Saeed Moradi³

¹Department of Animal Sciences, College of Agriculture and Natural Resources, Science and Research Branch, Islamic Azad University, Tehran, Iran

²Department of Animal Sciences, Islamic Azad University Shahre-Kord Branch, Shahre-Kord, Iran

³Department of Animal Sciences, Islamic Azad University Varamin Branch, Varamin, Iran

***Corresponding Author:** Yaser Rahimian, Department of Animal Sciences, Islamic Azad University Shahre-Kord Branch, Shahre-Kord, Iran.

ABSTRACT

During the months of mid-March to early November, 2015 Lori Bakhtiari ram lambs in 6-fold were examined the incidence of bloat and acidosis. Sheep fed first alfalfa planting and then residue cereal fields in the morning and afternoon. In this study were considered the grazing time of alfalfa field as a factor affecting the incidence of bloat and residue grain fields as a factor affecting the incidence of acidosis. The results showed observed bloat and acidosis index number than the total herd was influenced by grazing time of alfalfa and residue cereal fields and the observed number of bloating in the afternoon significantly increased compared to the morning. Also, the mortality index number of bloat into the total herd was influenced by time of grazing and its mortality was significant. The mortality of acidosis than the whole observed acidosis was influenced by the care timing and type, and sheep were treated faster and by professionals person had lower mortality.

Keywords: Acidosis, Bloat, Cereal residue fields, Legume. Lori Bakhtiari ram lambs.

INTRODUCTION

Disorders are metabolic condition which appearance as diversion in metabolism of nutrients and different with metabolic diseases that are caused by bacteria (1). Bloat is one of the most common metabolic disorders in ruminants. Symptom in sheeps and kids is distention “bloating” between the last rib and hip on the left that may be cause to stop the motion of the heart and animal mortality. Bloat in ruminants can be accruing with lots of carbohydrates which digest quickly or legumes forage consumption. Bloat is divided into two categories: 1. Free-gas cereals bloat and or fattened bloat, 2. Frothy bloat (1). The bloat of legumes consumption, usually created a thick foam stability in the rumen that prevent the exit gas even if burp with gases trapped inside the bubble, versus plant lipids and metabolites, and saliva muco-proteins are anti-foam agents which act as an anti-bloat by reducing the rumen surface pressure. Fast feeding, moisture and humidity in feed could help in the development of bloat. Dried alfalfa, smooth and milled diets are causing the bloat. Initially it was thought that the presence of saponins in this type of

plant is cause foaming in the rumen (2), but it is now clear that the main factor causing bloating foam in the rumen is exist a specific protein (3), which are the type of globular and soluble, and without degraded on microbial activity that reach in the rumen liquid surface. At this time, reduced the molecules solubility and with stretching of the protein chain provided possible to create a foam and gases trapped the bubbles are stable and a wall protein by fermentation gases move from the bottom to the top of the rumen and the foam will appear (2). Also, high internal concentration, saponin, pectin, hemicellulose and non-volatile fatty acids affect the frothy bloat (4). The incidence of bloat is partly genetic and research to find candidate genes for bloat control mainly based on the saliva and its compounds. Bartley et al., (5), show the saliva contain mucin. Salivary mucin makes out of gas from the bloating rumen or causes preventing or delaying the bloat. Bloat can be treated by physical method using a gastric tube, trocar, cannula and etc. or chemical methods with the use of mineral and organic oils such as flaxseed oil, corn, or gas oil (1).

Acidosis is metabolic disorder in ruminants, which the following to increase the consumption

of energy-dense material (concentrate) and insufficient structural carbohydrates (fiber) in the diet. When the rumen pH is lower than 6, acetic acid bacteria are more growth; as a result, reduced appetite in the sheep with this disorder (1). Treatment includes discharge of the rumen, cutting concentrates and feeding hay forages (1). Rumen acidosis is a common complication of disorders in sheep that in all season's causes creates this disorder and mortality of ruminants; due to overeating in consumption of feeds contain high carbohydrates such as wheat, barley, grain fields and etc. This disorder occurs in acute and chronic forms. In intensive feeding systems, ruminants are usually fed total mixed rations with a fixed concentrate: forage ratio. In such feeding situations, the only way for ruminants to adapt feeding behavior would be to decrease or redistribute intake across the day(6). However, Forbes and Provenza (7), asserted that ruminants in free-choice situation (i.e., where concentrates and forages are offered separately in 2 compartments of the manger) adjust their intake to minimize metabolic discomfort. There is high risk of sub-acute ruminal acidosis in sheep with separate access to forage and concentrate.

The present study sought to investigate the incidence of bloat and acidosis in sheep grazing in the fields of alfalfa and residue cereal and the effect on the occurrence of bloat and acidosis and mortality because of their.

Materials and Methods

Animal and Experimental Plan

The study was conducted in Farsan town from Chaharmahal and Bakhtiari, Iran. There are about 350 thousand Lori Bakhtiari ram lambs in Farsan city. In this study were examined 2000 Lori Bakhtiari ram lambs in 6-fold. The study was conducted during the months of mid-March to late April for bloat and Mid-September to late October for acidosis which the most feeding of alfalfa (for bloat) and residue cereal (for acidosis) fields. Herds fed with the same condition as follows grazing in a field of alfalfa in the early morning to the short time and then fed the residue cereal fields in the longer term. During the afternoon the rest of the sheep was be provided to enable chew. This type of feed (alfalfa + cereal residue fields) was repeated in the afternoon. Data were recorded regularly during the morning and afternoon. This study was conducted in partnership with 5 veterinarians in Farsan , Iran, and studied by examining all visits to veterinarians. Thus, the

studies of all cases were male and female sheep Veterinary treatment and studied the type and degree of disorders and determined as a percentage of bloat and acidosis.

Bloat Assay

To detect the occurrence of bloating was used the clinical signs included avoid grazing, looking at the under belly, startle, swelling of the left wall of the abdomen and flank, bending back and toughen the head and neck, kicking animals under its belly, repeatedly up and down, lap in his belly, identified dyspnea, tongue out of the mouth, salivation and swelling of the scrotum. In acute cases, bloated animals are constantly bounded upward and so, the foam was poured down of its mouth. Finally, the animal fell to the ground and in a short time was wasted (4). Pastoralists for the treatment of bloated sheep used therapies such as forced to run, lifting hands and at the same time hitting the abdomen and finally, the use of oil or gas oil (4). Sheep fall down by bloating doubtless died shortly.

Acidosis Assay

Most cases of acidosis were relate to lightweight animals, including sheep and goats and the acidosis of heavyweight animals are rare in this season of the year, because lightweight animal often used in the residue of wheat and barley fields and heavyweight animals less taken for grazing out of the farm. Most of this disorder was reported after grazing on wheat and barley harvested or uses the concentrate, wheat or barley. Acidosis occurs the two modes consist of acute and chronic which the chronic condition that is caused by the gradual eating of feeds contain high carbohydrates, happens inflammation of the rumen, indigestion, bruxism, foam of the mouth, limp, imbalance, reduced production and reduced fat milk. Acute kind of acidosis occurs suddenly eating large amounts of feed containing carbohydrates which have symptoms anorexia, tearing, Corey, severe distension of the rumen, excessive water accumulation in the rumen, abdominal pain, dehydrated tissues, rapid heartbeat, severe respiratory abnormalities, depression, diarrhea, lethargy and finally ground engaging and animal deaths in less than 24 hours, and so, foam of the mouth secretions may be seen in the form of feed poisoning that should not be confused with acidosis. If the following symptoms occur simultaneously in a number of sheep can be symptoms of sub-acute ruminal acidosis: quality and appearance of faeces which may be foamy

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and with gas bubbles, injured hoof and increasing lameness, appear mucus clots in faeces, fiber size increases in the faeces (greater than 2 cm), increase undigested particles and grains, reduce rumination activity (50% of the animals sit on the ground and do not chew) and activity and mobility is severely reduced.

RESULTS

Bloat Observation

The results in Table 1 show that numbers of observed bloating were similar to the results of other researchers and alfalfa can increase the possibility of bloat (3, 8, 9, 4).

Table1. Number the observed bloat and mortality in the separate herds

Indicators in 45 days	Number of herd					
	1	2	3	4	5	6
Total observed bloat	75	66	101	50	35	170
Observed bloat in the morning	22	27	25	16	10	55
Observed bloat in the afternoon	56	39	80	30	20	119
The number of lambs in the herd	400	295	490	140	275	400

Acidosis Observation

The remaining seed in the loss of crops at harvest taken by sheep during the grazing cereal residue

Fields that causing the acidosis due to an increase in residuals which results show in Table 2 .

Table2. Number the observed acidosis and mortality in the separate herds

Indicators in 45 days	Number of herd					
	1	2	3	4	5	6
Total observed acidosis	13	10	18	7	11	12
Mortality of acidosis	4	3	5	1	2	3
The number of lambs in the herd	400	295	490	140	275	400

Mortality of Acidosis and Bloat

The number of mortality caused by acidosis is shown in Figure 1. As can be seen mortality caused by acidosis compared to the total of

sheep (Figure 1) is much less than mortality caused by bloat compared to the total of sheep (Figure 2), which this reflects the fact that sheep are more sensitive to the bloat.

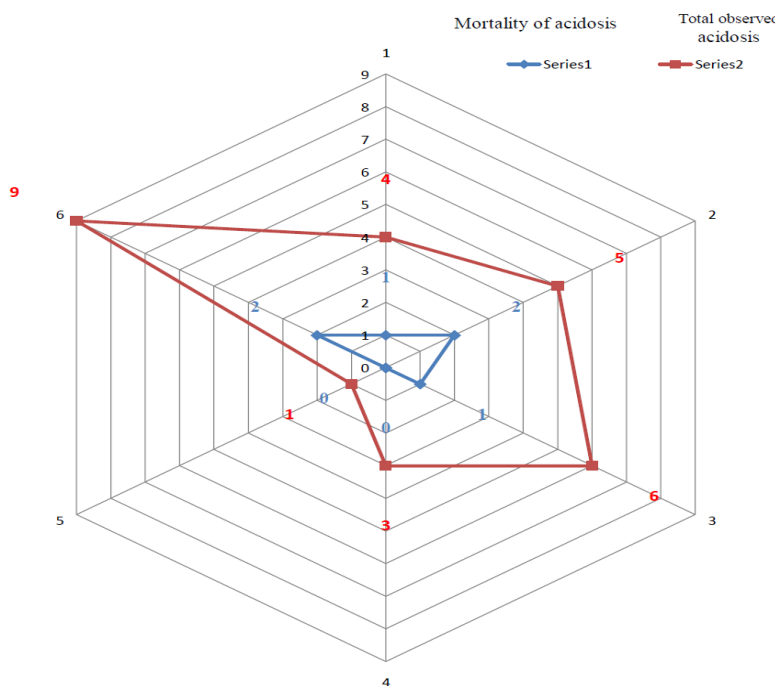


Figure 1. Mortality caused by acidosis compared to the total of lambs

Cause of more mortality from bloating in the afternoon (Figure 2) on the fact that, in frothy

bloat which occur the use of legume plants, sub-acute bloating conversion speed to acute bloat is

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high and water use in the noonday, also Contributed to the rapid progress. Consequently, before the shepherd find out the incidence of

bloating using signs, leading to the mortality of animals (3, 8, 4) .

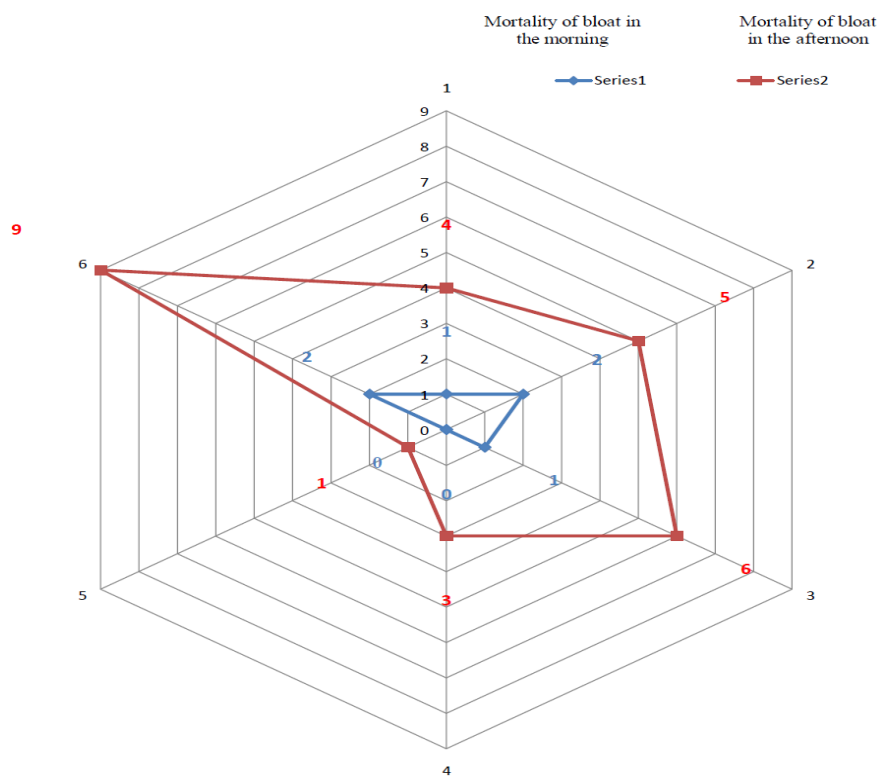


Figure 2. Mortality caused by bloat compared to the total of lambs.

DISCUSSION

The incidence of bloat was under the influence of grazing time and observed bloats in the afternoon than the morning were significantly increased. Because the perceptions of authors, animals tend to drink more water after taking the morning feed and closer to noonday and the drinking water will lead to increase in happening of bloating in the afternoon than in the morning . Also, Number of mortality from bloating compared to the total herd was under the influence of grazing time and the significant was different. Study of mortality from incidence of bloat compared the whole bloated observed in during both the morning and afternoon showed the number of mortality in the afternoon because drink water at noon and influence of water on the severity of bloat in the afternoon significantly increased than in the morning (P<0.05). Results of other studies confirmed the number of meals consumed of plants such as alfalfa could effect on the incidence of bloat (3, 2, 10).

Increase the amount of protein stabilizer bloating in the rumen liquor and no transfer it in the short term the following sections of the gastrointestinal tract leads to the bloating and

interactions created bloating with drank water causes strengthening of bloating in the second use of feeds. The results showed the sheep fed with straw after eating alfalfa in the morning which straw could not have a significant positive effect to prevent of bloating, and the cause and strengthening the other disorder is called acidosis. It seems, wheat straw feeding because the final growth, a decrease in digestibility and slow degradation rate, could

Not have a positive effect in the prevention of bloat. It has been shown the type and concentration of fatty acids in the rumen liquor can prevent the occurrence of bloat or reduce its severity (9, 10, 4).

The main reason for acute acidosis, made up of lactic acid in the rumen that usually the result of a sudden increase rapidly fermentable carbohydrates, so, another reason could be the lack of adaptation of rumen to rapidly fermentable carbohydrates and low buffering capacity in the rumen. Sub-acute rumen acidosis is characterized by repeated low pH in the rumen, but unlike acute acidosis, pH again be restored after each increase and decrease. The low pH tension lasts for a few minutes or a few hours. Long tension (>3-4 h) are attractive,

because they have a negative effect on fiber digestion and reduce the absorption capacity of the rumen epithelium and even damage the rumen epithelium. Damage to the absorbent tissue of digestive system increases the potential for bacterial population, amines and toxins produced by bacteria (lipopolysaccharides) to enter the hepatic portal system which causes liver abscesses (11). Sub-acute acidosis occurs due to the accumulation of volatile fatty acids in the rumen. While the feed is digested, volatile fatty acids (acetate, propionate and butyrate) are produced. If VFA production rate is high and to balance exceeds the capacity of the rumen, rumen pH downfall.

Large amounts of grain and concentrates in feed with the increasing incidence of acidosis and reducing gastrointestinal motility in the exit gas and feed moves through the digestive track is effective in causing bloating. Esophageal obstruction due to external pressure, obstruction of the cardiac, the vagus nerve disorders and diaphragm dysfunction are the main disadvantages of the gas out of the rumen. The use of oil and gas oil in the treatment of bloated sheep in the morning was the cause of lack of bloat involvement in the afternoon. This indicates the use of anti-bloating factors could successfully prevent the occurrence of bloat (12, 13, 4).

In this study probably animals in the morning with fresh hay consumption have been bloating sub-acute and noontime drank some water and in the afternoon, with replenishment quickly this phenomenon has become acute bloat and caused the death of the animal. Another important reason for the high mortality rate due to the incidence of acute bloating was rapid animal sitting among the sheep that resulting in lack of awareness of the incidence of bloating by shepherd and this information was obtained only after passing the sheep through the area where grazing and remaining the bloated sheep in the region. In this case, correct and scientific herd management, despite having experienced shepherd and getting around herd and sheep during grazing and check the status of their general, identification of individual animals and check their status by shepherd and, so, despite having sheepdog are important. Shepherd if receive appropriate wages and benefits was interest to getting around the animals and examines the problems. Also, well-trained sheepdog to help shepherd in awareness which this is one of the reasons of lower mortality in some herds (4).

Initially, it was hypothesized that the presence of saponins in plants provides conditions for foaming in the rumen. Saponins that belong to the steroid, able create soap-like foam in the water, but it has been recognized a major factor in the stability of the foam in the rumen of a specific protein. The protein molecules which are of globular and solution without degraded due to microbial activity arrive to liquid surface in the rumen. As this time, reduce the solubility of molecules and the stretching of the protein chain is possible to provide foam and with the movement of fermentation gases the bottom of the rumen to the top, stable gas bubbles are created with the protein walls and trapped in the bubbles in the rumen and foam occurs. High internal concentration, saponin, pectin, hemicellulose and non-volatile fatty acids affect the frothy bloat. Degree of bloating changes of the very low to cause minor discomfort to acute bloating and can cause death if the pressure of

the gas accumulation does not change. Despite the limited number of sheep under study, however, the results of this study confirm which mortality from bloat and acidosis, relatively is high at the time that, the sheep main feed are legumes and cereal residue fields and it is necessary, edification to herders for prevent the occurrence of bloat. In addition, by good nutrition can prevent the occurrence of these disorders and mortality (4, 9, 10, 12).

Bloat control is based management and proper nutrition and preventive methods which can be somewhat reduced the severity of these disorders. Items listed below is including measures: ruminant feed some hay forages before going out to pasture, increase roughage and dry ingredients in fattening animal, the use of Anti-foaming agents in the prevention dose in the diet or spraying on pasture or animal feed, the use of ionospheres and other similar compounds, the use of grain to be broken instead of grinding or mashed, adapted the rumen to changes in diet composition, diets with slow digesting ruminal carbohydrates formulation and increased consumption of pNDF.

In the young and ripe pastures, urea sprayed pastures and high consumption of glucose, calcium, magnesium and high nitrogen contribute to the development of the rumen bloat. Calcium with the blocking acetylcholine and relaxation of muscles and magnesium with the build rumen muscle relaxation, assist in the development of bloat. Characteristics of

livestock similar to genetic influences on rumen structure and its movements and composition of saliva proteins and the habit of grazing are affect factors. Also, consumption of certain species such as young corn, cabbage, peas, beans, legumes, white and red clover involved in this case.

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