

## PREVENTION OF PATHOLOGICAL KIDDING IN GOATS AND INCREASING OF THE VIABILITY OF NEWBORN GOATS

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### Abstract

In modern conditions of farm management there is a need for systematic regulation of certain stages of the reproduction process of animals to ensure the effective usage of the genetic resources of the breeding stock, the planning of production processes and the timing of their implementation. One of the problems of the zootechnical and veterinary sciences are invasive diseases and pathology of parturition in animals, which relate to the urgent issues of reducing reproductive capacity of animals and constrain the rapid development of livestock breeding, in particular, goat breeding. In case of a chronic course of parasitic diseases, the animals do not go into heat or there is an inferior sexual cycle, which accordingly leads to the shortage of offspring and significant losses in milk productivity. We have used a number of preventive measures to ensure normal pregnancy and increase the viability of newborn goats.

The analysis of obtained results showed that it is necessary to conduct parasitological surveys among the animals kept in private farms. Thus, only 4.1 % out of 98 examined does were free of *Strongylidae* spp., 12.3 % were affected by one species of worm, 26.5 % – by two, 21.4 % – by three, 20.4 % – by four, 10.2 % – by five and 6.1 % – by six species of *Strongylidae*. A significant affection by ectoparasites of the *Trichodectidae* family was observed in 25.5 % of the examined animals. The applied complex of measures (antiparasitic treatments and vitamins) provided normal kidding in 87.8 % (86 out of 98) goats, which allowed receiving 127 kids with a satisfactory clinical status with high development potential. The prospect of further parasitological surveys to ensure a healthy clinical condition of animals, receiving of viable young animals and the full realization of the productive potential of the animals were presented.

**Keywords:** parasitological surveys, prevention, pathology of kidding (parturition), goats, helminthes of goats, bovicosis.

### Introduction

Reproduction of animals is one of the most important and at the same time complex and time-consuming organizational-economic and technological process in the technology of animal husbandry (Zubets, 1997). In today's economic conditions, there is a need for active, systematic regulation of certain stages of the animals' reproduction to ensure the effective

utilization of the genetic resources of the breeding stock, the planning of production processes and the timing of their implementation. One of the problems of the zootechnical and veterinary sciences are invasive diseases and pathology of parturition in animals, which relate to the urgent issues of reducing reproductive capacity of animals and constrain the rapid development of livestock breeding, in particular, goat breeding (Yablons'kyy, 2009).

One of the factors that negatively affect the viability of newborns is the presence of a variety of invasions that have a diversity of effects on the organism of animals, which in turn can lead to the pathological course of the parturition, in particular its hypofunction and retained placenta, etc. In case of a chronic course of such diseases, the animals do not go into heat or there is an inferior sexual cycle, which accordingly leads to the shortage of offspring and significant losses in milk productivity (Koshevoy, 2008; Yablonsky, 2009). Such pathologies are common in private farms, in which from one to five heads of goats are kept. Generally known suggestions and recommendations for the prevention of the above-mentioned obstetric and neonatal diseases are not followed on the private farms.

Therefore, the purpose of our research was to monitor the distribution of parasitic diseases of goats in the private sector and to check the effectiveness of the preventive measures for the normal course of pregnancy and increasing of viability of newborn goats.

## Materials and methods

The research was conducted in private farms (Boryspil, Kyiv region) with a number of goats from one to five heads. In order to prevent invasive diseases of goats and increase the viability of newborn goats, our proposed scheme of preventive measures was applied.

In total, 25 private farms were inspected, 98 does were examined and prophylactically treated, and 147 kids were received from those does.

Parasitological studies were conducted on the basis of the Department of Parasitology and Tropical Veterinary of the National University of Life and Environmental Sciences of Ukraine.

Helminths infestation of goats of different age groups was identified by helminthocoprosopic studies of animals, which were performed twice a year before the animals were taken to the pasture and at the time when animals were placed at the stall keeping. The main indices of parasitic infestation during the epizootiological examination were the extensiveness of the invasion (EI) and the intensity of the invasion (II). Helminthocoprosopic examinations were carried out by using the standardized method proposed by G. A. Kotelnikov and V. M. Khrienov (Kotelnikov, 1991). The intensity of the invasion was determined by counting the number of eggs of helminths in 1 g of feces using standardized McMaster egg counting chamber (Stepanov, 1983). Differentiation of larvae of intestinal *Strongylidae* was carried out after their cultivation to the invasive stage by using P. A. Poliakov technique (Poliakov, 1953). Investigation of the skin lesions of animals by ectoparasites was carried out by visual inspection of animals. The detected parasites were examined under a small magnification of the microscope.

The treatment of animals against intestinal *Strongylidae* was carried out by "Fenzol 22%" – a powder for internal use (the manufacturer is PLS MSE “Ukrzoovetprompostach”), the drug refers to benzimidazoles and their derivatives, slows down the metabolism of helminths, resulting in exhaustion and paralysis of parasites. This drug has no embryotoxic and teratogenic effects on the animal's body.

Also, animals subcutaneously received vitamin preparation based on retinol acetate (30,000 IU / ml), cholecalciferol (40.000 IU in 1 ml) and alpha-tocopherol acetate (20.0 mg / ml) for 10 days prior to insemination and once a month during pregnancy in a dose of 0.5 ml per animal.

The animals intramuscularly received preparations on the basis of butafosfan (100 mg in 1 ml) and cyanocobalamin (0.05 mg in 1 ml) 14 days before insemination and once a month during pregnancy.

The combination of these drugs is caused by the complex effect on the organism of animals during pregnancy, creating the optimal conditions for the normal development of the fetus and course of the birth process.

## Results

It was determined that the goats in the private sector were infested with *Strongylidae* of gastro-intestinal tract, namely: *Oesophagostomum radiatum* (Rudolphi, 1803) Railliet, 1898; *Bunostomum phlebotomum* (Railliet, 1900) Railliet, 1902; *Ostertagia ostertagi* (Stiles, 1892) Ransom, 1907; *Trichostrongylus axei* (Cobbold, 1879) Railliet et Henry, 1909; *Cooperia punctata* (Linstow, in Schnyclp, 1906) Ransom, 1907, *Nematodirus spatiger*.

*N. spatiger* from other *Strongylidae* of the gastro-intestinal tract was differentiated according to the structure of the eggs. All other *Strongylidae* were differentiated by the structure of their invasive larvae. The larvae of *C. punctata* had 16 intestinal cells, it was quite large, the length was 0.83–0.99 mm, the tail end of the cap was relatively long. Larvae of *T. axei* had 16 intestinal cells, the tail end was in the larvae's cap, it was short and ended with thorn. *O. ostertagi* larvae's length was 0.8–0.95 mm, it had 16 intestinal cells, the tail end of the cap was short. The larvae of *O. radiatum* had the length of 0.75–0.9 mm, 20 intestinal cells, the tail end of the cap was long, filiform, 1/3 of the entire length of the larva. *B. phlebotomum* larvae were small, their length was 0.52–0.63 mm, the intestine was not differentiated into separate cells. The posterior part of the esophagus had a slight thickening.

Laboratory studies had shown that there were no farms free of goats' parasites. Only 4.1 % out of 98 examined does were free from *Strongylidae*, 12.3 % were affected by one species of worms, 26.5 % – by two, 21.4 % – by three, 20.4 % – by four, 10.2 % – by five and 6.1 % – by six *Strongylidae* species.

The most common *Strongylidae* species of goats were *T. axei* (extensiveness of the invasion in goats was 72.0 %) and *C. punctata* (extensiveness of the invasion in goats was 74.0%). Extensiveness of the invasion by *N. spatiger* was 65.0 %.

The extensiveness and intensity of animal invasion by intestinal *Strongylidae* increased with age (especially in farms, where animals had never been treated with anti-helminthic drugs).

Eggs of helminths were not detected by laboratory investigation of feces of 1.5-months aged goats. However, the obtained results do not allow claiming that those animals were free from invasion since helminths might not reach puberty.

In the goats up to 5 months of age only *Bunostomum phlebotomum* species was detected. Extensiveness of the invasion of young animals by this parasite was up to 8.5 %. In this case, in young animals, the extensiveness and intensity of invasion by this pathogens was higher in comparison with adult goats. In our opinion, infestation of goats by helminths occurs mainly

after the age of 6 months on the pastures intensively contaminated by eggs and larvae of helminths. The exception is *Bunostomum phlebotomum*.

The greatest variety of parasites we observed in goats from the age of two years and older. Most commonly, parasites were observed in various associations. Each association of parasites acted pathogenically on the goat's organism. That was confirmed by clinical studies of animals with identified mixed invasions. Registered clinical manifestations of diseases included weight loss, anorexia, diarrhea, depression, sometimes – cramps. Monoinvasions with low intensity of invasion had the subclinical form.

In 25.5 % of the examined goats of various private farms, a significant contamination by the ectoparasites – louse *Bovicola caprae* of the *Trichodectidae* family was detected. In sick goats anxiety, body scratches, hair loss, and reduced milk production was noted. All sick animals were treated with antiparasitic drugs. Against helminths, animals were treated at a dose of 0.7 grams per 10 kg of live weight twice, at intervals of 14 days.

Against bovicolosis the animals were treated with insectoacaricidal powder with the active ingredient deltamethrin (0.05 grams per 100 grams; the manufacturer is PLS MSE “Ukrzoovetprompostach”); twice, at a dose of 50 grams per head, at intervals of 10 days. Also, owners of animals were asked to perform disinvasion of the premises, where animals were located.

Eggs of helminths were not detected in animals' feces by helminthoovoscopic studies, that were carried out on 21 days after repeated deworming. Also, during the animal examination for the detection of ectoparasites, *Bovicola caprae* was not found.

## Discussion

The extensiveness of the invasion of the intestine of the examined goats by the pathogens of invasive diseases was 95.9 %. There were identified 6 species of intestinal *Strongylidae* in goats on the farms of the private sector: *Nematodirus spatiger*, *Oesophagostomum radiatum*, *Bunostomum phlebotomum*, *Ostertagia ostertagi*, *Trichostrongylus axei*, *Cooperia punctata*. Louses were detected in goats in 56.0 % of the surveyed farms. In the young goats, grown in a stall-walking system, only *Bunostomum phlebotomum* out of other helminths was found. From ectoparasites – louses.

The analysis of the results showed that the applied set of measures had provided the reduction of the number of newborns with unsatisfactory clinical status with a low development potential, which was only 6.8 % of the total number of born goats (table 1). The mortality of newborn goats was 6.1 %, in five farms in the case of keeping of five heads of goats.

Summarizing the obtained data it was shown that conducting of parasitological examination of livestock of private farms is an obligatory link in maintenance of a healthy clinical condition of does.

Table 1. Efficiency of prophylactic measures of pathological kidding in goats and increasing of viability of newborn goats

| Indicators                                                               | Quantity<br>n, % |
|--------------------------------------------------------------------------|------------------|
| Clinical status and development potential of 147 kids:                   |                  |
| Satisfactory clinical status with high development potential             | 127 (86.4)       |
| Unsatisfactory clinical condition                                        | 10 (6.8)         |
| Satisfactory clinical status with medium development potential           | 10 (6.8)         |
| Clinical status of 20 kids with low and medium potential of development: |                  |
| Morbidity                                                                | 11 (7.5)         |
| Mortality                                                                | 9 (6.1)          |
| Out of 98 does:                                                          |                  |
| Hypofunction of kidding (parturition)                                    | 4 (4.1)          |
| Postpartum pathologies                                                   | 8 (8.2)          |

It should be noted that the applied complex of measures (antiparasitic treatments and vitamins) provided normal kidding in 87.8% (86 out of 98) goats, which provided 127 goats with a satisfactory clinical status with high development potential.

## Conclusions

The analysis of the results showed that it is necessary to conduct parasitological surveys of the animals kept in private farms. Thus, only 4.1 % of examined does were free of *Strongylidae* species, 12.3 % were affected by one species of helminths, 26.5 % - by two, 21.4 % - by three, 20.4 % - by four, 10.2 % - by five and 6.1 % - by six species of *Strongylidae*. In 25.5 % of the examined animals a significant infestation by ectoparasites of the *Trichodectidae* family was observed. We have presented the prospect of further parasitological studies to ensure a healthy clinical status of animals, receiving of the viable young animals and the full realization of the productive potential of the animal.

## Acknowledgements

Special appreciation and gratitude is extended to the owners of private farms for the opportunity to conduct a survey of livestock.

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