

## **Dried distillers grains with solubles in ruminants' rations and emission of nitrogen and phosphorus into the environment**

### **Summary**

Rising production of ethanol from grains requires developments of utilization of large quantities of dried distillers' grains with solubles (DDGS). DDGS is a good and cheap feed, with a high concentration of compounds including protein, fat, phosphorus and minerals. Their content is three times higher than in grains which are the raw materials for the fermentation process. However, too high inclusion of DDGS in the mixtures results in an increase in the emissions of ammonia, odorous volatile compounds, unused protein and total phosphorus, as well as  $\text{PO}_4^{3-}$  ions in the water-soluble form from manure to the environment. Depending on the form in which the compound occurs in the feces, and consequently in the manure, the extent of its mobility in fertilized soils and eutrophication is determined. Therefore, indication of strategies, enabling effective distribution of nitrogen and phosphorus from manure is fully reasonable. The aim of this review paper is to draw attention to the composition of the manure obtained from ruminants fed with rations with DDGS inclusion and the safety of its use as a fertilizer. Participation of dried distillers' grains with solubles in rations for ruminants should not exceed 20%. It will contribute to the reduction of the release of non-utilized compounds to the environment including  $\text{NH}_3$  and P.

**KEY WORDS:** feeding of ruminants, DDGS, composition of manure, fertilizer, environment