DIRECT NITROUS OXIDE EMISSIONS FROM PASTURES OF NORTH-WESTERN PART OF RUSSIAN FEDERATION

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Two pastures – one in St. Petersburg region and the other in Karelia – with areas of high, medium and low grazing impact were studied to evaluate the effect of cow grazing on direct N_2O fluxes. All the measurements were conducted during the grazing period (May – September) of 2010, which was very dry. N_2O cumulative fluxes increased with increasing grazing impact. The highest N_2O cumulative fluxes for the grazing period were measured from the areas with high (0,9 and 2,7 kg N_2O-N ha^{-1} for St. Petersburg and Karelia pastures, respectively) and medium (0,4 and 0,7 kg N_2O-N ha^{-1} for St. Petersburg and Karelia pastures, respectively) grazing impact, while the areas with low grazing impact emitted only about 0.2 kg N_2O-N ha^{-1}. The N_2O fluxes were affected by such soil properties as soil moisture content, bulk density and available N content. For the areas with high grazing impact all these soil parameters were much higher than for the other areas.

Key words: Nitrous oxide, grazing impact, weather conditions, soil bulk density