Nitrous oxide emissions as affected by landscape and soil properties in Alberta and Saskatchewan. (S03izaurralde111721-Poster)

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Abstract:

Nitrous oxide fluxes from soils are inherently variable in time and space. An improved understanding of this variability is needed to make accurate estimates of N2O fluxes across regions. We measured N2O fluxes and collected ancillary data at two locations in Canada. At Mundare (AB), measurements were made by landform position and land use. At Swift Current (SK), data were collected by landform position and N rate. At Mundare, landscape position affected N2O emissions but the pattern varied seasonally. During a 46 d period in summer 1995, N2O-N flux from a backslope (0.043 g m-2) was greater than fluxes from three other positions (0.007 g m-2). The pattern changed during a 43 d spring thaw of 1996 when fluxes from depressional areas were greatest (0.171 g m-2). N2O emissions from unmanaged areas were small. The emission pattern during summer 1996 was similar to that of 1995 but the fluxes were an order of magnitude larger. At Swift Current, N2O fluxes in summer 1999 were affected by topography and N rate. Fluxes were greatest in depressional areas receiving N at 110 k ha-1 (0.314 g m-2). Information on landscape effects is essential for properly scaling up N2O emissions.

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