

# Study says cow urine may be adding to global warming

## Degraded pastures emitted significantly more nitrous oxide

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Cow urine — a minor fount of research in India for its medicinal benefits — may also contribute to global warming. The urine from the ruminant is a source of nitrous oxide emissions (N<sub>2</sub>O), a gas that is 300 times more powerful than carbon dioxide. Most times, when cow urine is used in degraded pastures, which are also seen in vast tracts of land in India, N<sub>2</sub>O emissions are tripled, says a study conducted in Colombia, Argentina, Brazil, Nicaragua, Trinidad and Tobago, and published in the latest edition of the peer-reviewed *Scientific Reports*.

### Less understood

That cattle and livestock are a significant source of methane, a greenhouse gas, and therefore a contributor to global warming, is well-known. However, the role of cow urine is less understood. For the study, researchers collected urine from cattle and spilled 500 millilitre samples on paired cattle fields classified as de-

graded or healthy, which was determined by vegetation coverage. In six of the seven test sites, degraded pastures emitted significantly more N<sub>2</sub>O — sometimes up to three times as much. The study was conducted by the International Centre for Tropical Agriculture (CIAT), Colombia.

Dung and urine are commonly mixed together for manure in Indian fields. Since, India also hosts the world's largest livestock population, as well as significant tracts of degraded land, the findings may have a bearing on nitrogen emissions from Indian fields. A 2012 satellite study by the Indian Space Research Organisation (ISRO) said that about 30% of India's geographical area (or about 96.4 million hectares) is degraded.

"This study adds to the case for land restoration. Degraded pastures not only affect food security and the livelihood of farmers today, but affect the livelihood of future farmers because they emit more gases that cause global warming," said Ngo-

midzashe Chirinda, a CIAT researcher and the study's lead author said in a statement.

### More N<sub>2</sub>O

Degraded grasslands emitted more N<sub>2</sub>O than healthy pastures because the vegetation in the latter took up some of the reactive nitrogen compounds and only the leftovers were emitted.

According to an expert in India, India had estimates for dung and urine production per cow or buffalo or other livestock animals as well as their overall estimates for their populations, as per 2012 livestock census, but the exact contribution of cow urine to the total nitrous oxide emission from India are not estimated precisely.

"In that sense, studies like these are probably needed and useful for Indian livestock emission studies. We have very limited research on this," said N. Raghuram, Department of Biotechnology, Indraprastha University, and Chairman, International Nitrogen Initiative.