

# Data from: Feces nitrogen release induced by different large herbivores in a dry grassland

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Publication date: October 9, 2017

Publisher: Dryad

<https://doi.org/10.5061/dryad.7hn64>

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## Citation

Wang, Jingzhi et al. (2017), Data from: Feces nitrogen release induced by different large herbivores in a dry grassland, Dataset, <https://doi.org/10.5061/dryad.7hn64>

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## Abstract

Large herbivores have pronounced effects on nutrient cycling in grasslands. These organisms are known to alter the quality and quantity of plant production as well as the amounts and quality of plant litter and animal wastes. The generalization that the relative quality of detritus inputs is enhanced by herbivores is well known, but how this process is affected by diet selection processing and feces production of different large herbivores remains largely unstudied. Here, we measured how these differences for cattle and sheep on a dry grassland might influence nitrogen (N) mineralization from feces. We found that cattle of larger body size tended to select low quality grass *Stipa grandis* as the major food source. In contrast, the subdominant grass *Leymus chinensis* with relatively high N content was a majority in the diet

of smaller sheep, when palatable forbs were insufficient in the field. This diverse diet quality resulted in a C/N ratio of cattle feces that was higher than that of sheep feces. Relatively higher labile C availability in the cattle feces, namely relatively higher cellulose/hemicellulose contents, promoted microbial growth and in turn accelerated cattle feces decomposition. A surprise finding was that the feces from cattle mineralized about twice as much N as feces from sheep, despite the latter having slightly higher N content. From a grassland productivity perspective, increasing the proportion of large body-sized species in grazing herbivore assemblages perhaps is beneficial to forage productivity and nutrient recycling by the rapid degradation of feces.

## Usage Notes

### Diet selection of herbivores

Proportions of each plant species foraged by herbivores.

Diet\_Selection.CSV

### Feces nutrient release

Feces C loss (CR), N loss (NR), C release rates (CRR) and N release rates (NRR) during decomposition.

Feces\_C\_N\_Release.CSV

### The chemical composition of fresh feces

The chemical composition and fiber contents of fresh feces. The data include fecal C, N, hemicellulose, cellulose, lignin (ADL) and lignin/N ratios.

Feces\_Chem\_Fiber.CSV

### Feces C/N Ratios

Dynamics of fecal C/N ratios during decomposition.

Feces\_CN\_Ratio.CSV

### Feces remaining and water content

Dynamics of feces remaining ratio (dry matter) and water content during decomposition.

Feces\_Mass\_Moisture.CSV

### Feces microbial biomass carbon

Dynamics of feces microbial biomass carbon during decomposition.

Feces\_MBC.CSV

### The chemical composition of plants

The C and N contents of plants foraged by herbivores.

Plant\_C\_N.CSV

## Soil mineral N and water contents

The mineral N contents and water contents of soil under feces bags at day 0 and day 30 during decomposition.

Soil.CSV

## C/N ratios of diet

C/N ratios of herbivores diet.

Diet\_C\_N.CSV

## README

Introductions for data files.

## References

This dataset is supplement to <https://doi.org/10.1002/eap.1640>

## Location

 Xilinhot (44°08' N 116°20' E) in Inner Mongolia Autonomous Region of China

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## Keywords

diet selection, Cattle, sheep, *Leymus chinensis* (Trin.) Tzvel., Feces decomposition, Feces N release, N mineralization, *Anemarrhena asphodeloides* Bunge, Holocene, *Stipa grandis* P. Smirn.

## Files

10 files for this dataset

Diet_C_N.CSV	99 B	text/csv
Diet_Selection.CSV	322 B	text/csv
Feces_CN_Ratio.CSV	940 B	text/csv
Feces_C_N_Release.CSV	1.68 kB	text/csv
Feces_Chem_Fiber.CSV	584 B	text/csv
Feces_MBC.CSV	532 B	text/csv
Feces_Mass_Moisture.CSV	1.27 kB	text/csv
Plant_C_N.CSV	567 B	text/csv

README.txt	2.66 kB	text/plain
Soil.CSV	848 B	text/csv

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