

Description

This is a dataset of lysimeter drainage and nitrogen (N) and phosphorus (P) leaching from 5-8 species diverse pasture across different soil types, climate, and management intensities, with a subset of ryegrass-clover lysimeters for comparison. These data were collected as part of a Ministry for Primary Industries Sustainable Land Management and Climate Change Freshwater Mitigation project "Leaching losses from diverse pasture" (contract # 406345). The lysimeters were located at the Ashley Dene Research & Development Station in Canterbury, New Zealand, and a private farm near Tihoi, Waikato, New Zealand.

Ashley Dene Research & Development Station datasets:

Continuously logged data of precipitation and lysimeter drainage with discrete samples for leachate/effluent concentrations and recorded inputs of dung, urine, and fertilizers and harvested dry matter.

Effluent-irrigated site -

Filename: Diverse_Pasture_Ashley_Dene_Effluent_Irrigated_Lysimeters.csv

Lysimeter treatment key:

LW1 – ryegrass-clover

LW2 – diverse pasture

LW3 – diverse pasture

LW4 – ryegrass-clover

LW5 – ryegrass-clover

LW6 – diverse pasture

Irrigated-only site –

Filename: Diverse_Pasture_Ashley_Dene_Irrigated_Only_Lysimeters.csv

Lysimeter treatment key:

L1 – diverse pasture

L2 – diverse pasture

L3 – diverse pasture

Non-irrigated site –

Filename:

Lysimeter treatment key: Diverse_Pasture_Ashley_Dene_Non_Irrigated_Lysimeters.csv

LD1 – diverse pasture

LD2 – diverse pasture

LD3 – diverse pasture

LD4 – diverse pasture

LD5 – diverse pasture

LD6 – diverse pasture

Ashley Dene data file column name key:

Date

Year_no – numerical value for each full year of measurement (1-3, 0 is a part year)

Precipitation_mm – daily precipitation from the non-irrigated site (mm)

Irrigation_mm – daily input of irrigation and liquid effluent (mm)

Drain_mm_(lysimeter) – daily lysimeter drainage (mm)

Leach_N_kg_ha_(lysimeter) – total leached N calculated from sample concentration and drainage volume since the previous sample

Leach_NO3_kg_ha_(lysimeter) – leached NO₃-N calculated from sample NO₃ concentration and lysimeter drainage volume since the previous sample

Leach_P_kg_ha_(lysimeter) - total leached P calculated from sample concentration and drainage volume since the previous sample

Harvest_Mg_ha_(lysimeter) – total harvested dry matter from the lysimeter

Grass_Mg_ha_ (lysimeter) – harvested dry matter sorted to grass functional group

Plantain_Mg_ha_(lysimeter) – harvested dry matter sorted to plantain

Clover_Mg_ha_(lysimeter) – harvested dry matter sorted to legumes

Dung_N_kg_ha – input of N from added dung

Urine_N_kg_ha – input of N from added synthetic urine

Dung_P_kg_ha – input of P from added dung

Urine_P_kg_ha – input of P from added synthetic urine

Fert_N_kg_ha - input of N from fertilizer addition

Fert_P_kg_ha – input of P from fertilizer addition

Effluent_N_kg_ha – input of total N from effluent from concentration of N in samples of water input and total water input since the previous sample

Effluent_P_kg_ha – input of P from effluent from concentration of P in samples of water input and total water input since the previous sample

Tihoi datasets:

Regular collections of drainage volume and samples for concentrations, along with harvested dry matter, and precipitation and management inputs.

Leachate data filename: Tihoi_Non_Irrigated_Lysimeters_leachate.csv

Dry matter harvest data filename: Tihoi_Non_Irrigated_Lysimeters_Dry_Matter_Harvest.csv

Precipitation and management filename: Tihoi_Non_Irrigated_Lysimeters_Inputs.csv

Tihoi data file column name key:

Date

Year_no – numerical value for each full year of measurement (1-3)

Pasture_type – lysimeter pasture type treatment ('ryegrass-clover' or 'diverse pasture')

Lysimeter – lysimeter number

Drain_mm – lysimeter drainage volume (mm)

N_mg_l – total N concentration of leachate

NO3_mg_l – NO₃-N concentration of leachate

P_mg_l – total P concentration of leachate

Leach_N_kg_ha – total leached N calculated from sample concentration and drainage volume since the previous sample

Leach_NO3_kg_ha – leached NO₃-N calculated from sample NO₃ concentration and lysimeter drainage volume since the previous sample

Leach_P_kg_ha - total leached P calculated from sample concentration and drainage volume since the previous sample

Harvest_Mg_ha – total harvested dry matter from the lysimeter

Grass_Mg_ha – harvested dry matter sorted to grass functional group

Plantain_Mg_ha – harvested dry matter sorted to plantain

Clover_Mg_ha – harvested dry matter sorted to legumes

Precipitation_mm – daily precipitation from gauges

Urine_N_kg_ha – input of N from added synthetic urine

Fert_N_kg_ha - input of N from fertilizer addition

Fert_P_kg_ha – input of P from fertilizer addition