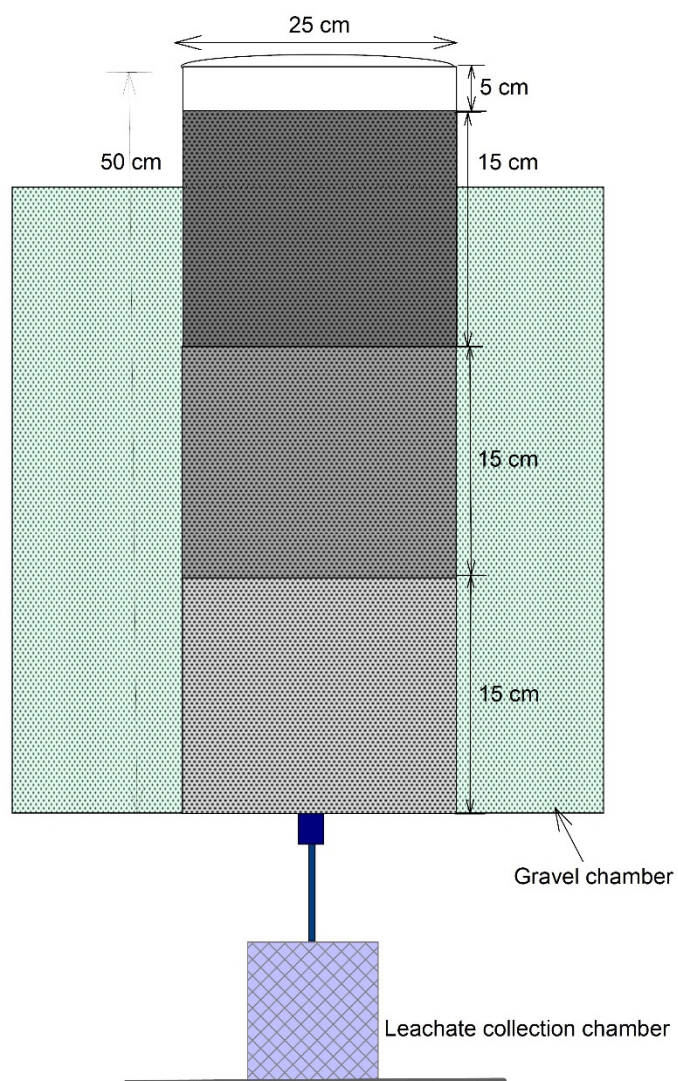
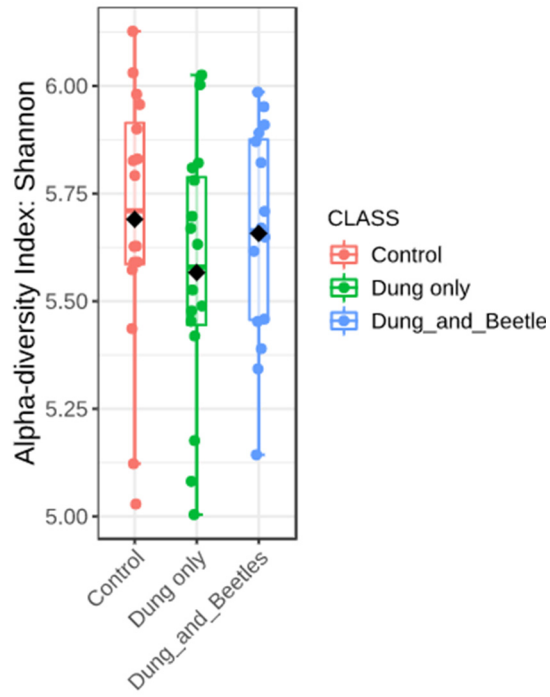


Supplementary Material

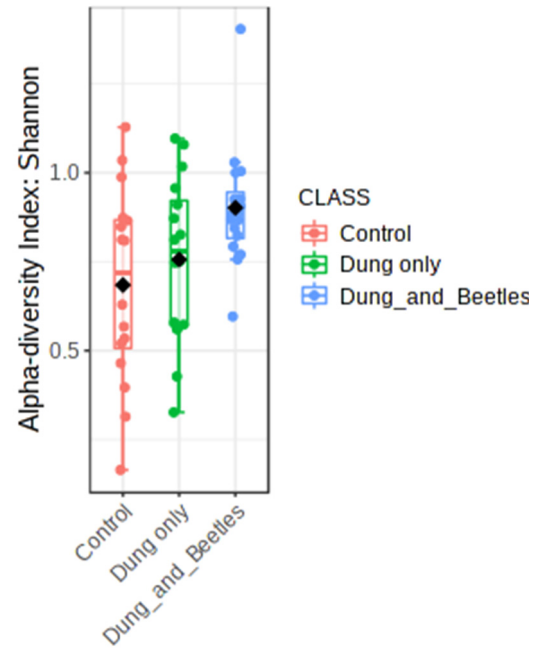


Supplementary figure S1. Schematic representation of the general assembly of a lysimeter column and leachate collection system, established in Wagga Wagga NSW.

A



B



Supplementary figure S2. The impact of soil management strategies on the diversity of (A) bacterial and (B) fungal phyla.

Supplementary table S1. Monthly Climate Statistics for 'WAGGA WAGGA AMO' [072150], NSW, Australia.
(Latitude: 35.16° South, Longitude:147.46° East, Elevation: 212 m) (Source:
http://www.bom.gov.au/climate/averages/tables/cw_072150.shtml)

	May	June	July	August	September	October	November	December	Annual
Mean maximum temperature (Degrees C) for years 1942 to 2022	17.4	13.9	12.8	14.5	17.7	21.7	25.9	29.6	22.2
Mean minimum temperature (Degrees C) for years 1942 to 2022	5.9	3.7	2.8	3.5	5.1	7.8	11	13.9	9.1
Mean daily ground minimum temperature Degrees C for years 1971 to 2016	3.1	1.2	0.2	0.7	2.3	4.7	8.1	10.8	6.2
Mean rainfall (mm) for years 1941 to 2022	50.7	50.7	53.5	51.1	49.2	55.7	48.1	45.7	571.4
Mean number of days of rain for years 1941 to 2022	9.2	11.4	13.6	13	10.5	9.2	7.7	6.3	104.2
Mean daily sunshine (hours) for years 1986 to 2016	6.3	4.6	4.8	6.4	7.6	9.2	9.7	10.4	8.1
Mean daily evaporation (mm) for years 1966 to 2021	2.1	1.3	1.2	1.9	3	5	7.2	9.4	5.1

Supplementary table S2. Nutrients in leachates collected from water percolating through four different soil types in lysimetry experimentation performed in Wagga Wagga, NSW during May – November 2021.

Soil type	Treatment	Replicate	NOx (mg/L)	TKN (mg/L)	Total P (mg/L)	NH ₄ (mg/L)
Chromosol	Dung only	1	4.2	0.0	0.0	0.0
Chromosol	Dung only	2	0.0	0.0	0.0	0.0
Chromosol	Dung only	3	0.3	0.0	0.1	0.0
Chromosol	Dung only	4	0.2	0.0	0.0	0.0
Chromosol	Dung + Dung beetles	1	1.7	0.0	0.0	0.0
Chromosol	Dung + Dung beetles	2	0.2	0.0	0.0	0.0
Chromosol	Dung + Dung beetles	3	3.0	0.0	0.0	0.0
Chromosol	Dung + Dung beetles	4	0.6	0.0	0.0	0.0
Kandosol	Dung only	1	0.0	0.0	0.0	0.0
Kandosol	Dung only	2	0.0	0.0	0.0	0.0
Kandosol	Dung only	3	0.0	0.0	0.0	0.0
Kandosol	Dung only	4	1.5	0.0	0.2	0.0
Kandosol	Dung + Dung beetles	1	0.0	0.0	0.0	0.0
Kandosol	Dung + Dung beetles	2	0.1	0.0	0.0	0.0
Kandosol	Dung + Dung beetles	3	0.0	0.0	0.0	0.0
Kandosol	Dung + Dung beetles	4	0.0	0.0	0.0	0.0
Rudosol	Dung only	1	2.4	0.0	0.0	0.0
Rudosol	Dung only	2	19.5	0.0	0.1	0.0
Rudosol	Dung only	3	21.2	0.0	0.1	0.0
Rudosol	Dung only	4	10.6	0.0	0.1	0.0
Rudosol	Dung + Dung beetles	1	13.5	0.0	0.0	0.0
Rudosol	Dung + Dung beetles	2	20.9	0.0	0.0	0.0
Rudosol	Dung + Dung beetles	3	11.6	0.0	0.0	0.0
Rudosol	Dung + Dung beetles	4	20.1	0.0	0.1	0.0
Vertosol	Dung only	1	23.0	0.0	0.0	0.0
Vertosol	Dung only	2	22.4	0.0	0.0	0.0
Vertosol	Dung only	3	22.7	0.0	0.0	0.0
Vertosol	Dung only	4	0.0	0.0	0.0	0.0
Vertosol	Dung + Dung beetles	1	2.8	0.0	0.0	0.0
Vertosol	Dung + Dung beetles	3	22.8	0.0	0.0	0.0
Vertosol	Dung + Dung beetles	4	22.5	0.0	0.0	0.0
Vertosol	Dung + Dung beetles	2	16	0.0	0.0	0.0