Adonis and ANOSIM analysis Supplementary Information

	Adonis				ANOSIM			
Reference	Closed reference		Open reference		Closed reference		Open reference	
Sample/Value	P value	R2 value	P value	R2 value	P value	R value	P value	R value
Longitude	0.668	0.0322	0.321	0.0347	0.0690	0.871	0.0590	0.885
Latitude	0.889	0.0297	0.0309	0.781	0.024	0.847	0.226	0.226
pH	0.069	0.0406	0.0388	0.108	0.458	0.000892	0.320	0.0500
Depth	0.786	0.0318	0.0333	0.583	0.328	0.0656	0.279	0.0877
Phosphorous	0.501	0.171	0.174	0.345	0.193	0.0940	0.239	0.0761
Nitrogen	0.180	0.212	0.171	0.549	0.218	0.0680	0.563	-0.0290
Potassium	0.622	0.135	0.132	0.761	0.637	-0.0482	0.217	0.0854

Adonis (Analysis of variance using distance matrices)

- Function for the analysis and partitioning sums of squares using semimetric and metric distance matrices
- No significance if its p value > 0.05 is R is close to 0.
- Significant p value < 0.05, R is close to 1

Adonis Table with R value

Reference	Closed reference			Open reference		
Sample/Value	P value	R	R2 value	P value	R	R2 value
Longitude	0.668	0.179	0.0322	0.321	0.186	0.0347
Latitude	0.889	0.172	0.0297	0.0309	0.884	0.781
pH	0.069	0.201	0.0406	0.0388	0.329	0.108
Depth	0.786	0.178	0.0318	0.0333	0.764	0.583
Phosphorous	0.501	0.414	0.171	0.174	0.587	0.345
Nitrogen	0.180	0.460	0.212	0.171	0.741	0.549
Potassium	0.622	0.367	0.135	0.132	0.872	0.761

Legend: p value red = > 0.05 , R value red = close to 0

All of closed reference data is not significant.
Latitude, Depth is significant. pH, Phosphorous, Nitrogen and Potassium are slightly significant.

Hence comparing with open reference has more significance, especially Latitude and Depth.

Future experiments:

Compare between genus is certain Latitudes or Depths have more soil borne pathogenic bacteria genus.

ANOSIM (Analysis of Similarities)

- Test whether there is a significant difference between two or more groups of sampling units, statistically
- No significance if its p value > 0.05 is R is close to 0.
- Significant p value < 0.05, R is close to 1

ANOSIM table

	ANOSIM			
Reference	Closed reference		Open reference	
Sample/Value	P value	R value	P value	R value
Longitude	0.0690	0.871	0.0590	0.885
Latitude	0.024	0.847	0.226	0.226
pH	0.458	0.000892	0.320	0.0500
Depth	0.328	0.0656	0.279	0.0877
Phosphorous	0.193	0.0940	0.239	0.0761
Nitrogen	0.218	0.0680	0.563	-0.0290
Potassium	0.637	-0.0482	0.217	0.0854

Legend: p value red = > 0.05 , R value red = close to 0

For closed reference, Latitude is significant, Longitude is slightly significant while pH, Depth, Phosphorous, Nitrogen and Potassium are not significant.

For open reference, Longitude is slightly significant while Latitude, pH, Depth, Phosphorous, Nitrogen, Potassium are not significant

Hence when comparing using ANOSIM, only Latitude values should be compared.

Future experiments:

Compare if different Latitudes houses more soil borne pathogenic bacteria