

## Background/objective

Our ability to characterize soil microbiomes relies on having a high-quality reference to compare what we observe to previously characterized microbes. This publication expands a genome reference database that was curated to describe bacteria that were previously isolated from soil environments. Specifically, we describe soil-associated plasmids that can transfer genes, like those associated with nitrogen fixation, from varying host bacteria.

## Approach

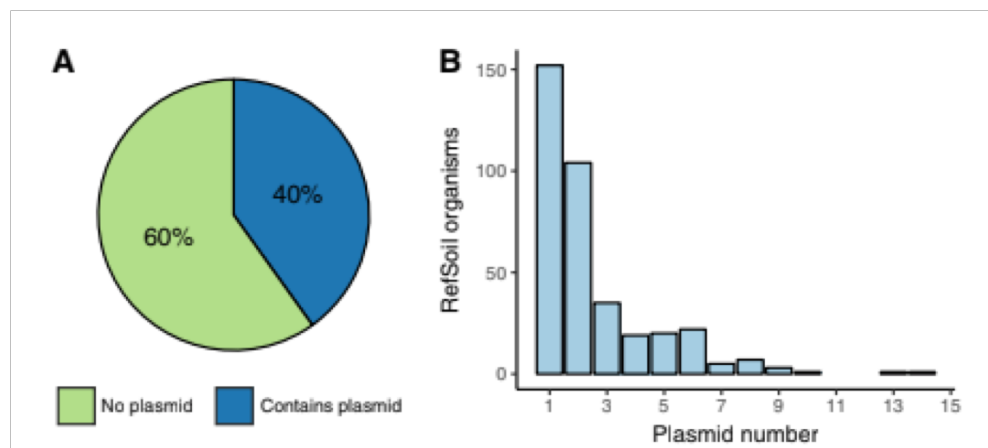
- ❖ Plasmid genes associated with soil bacterial genomes were characterized by their sizes, gene content, and distribution in various types of soils.

## Results

- ❖ Many of the organisms in the soil contain plasmids (see figure).
- ❖ Soil plasmids are generally larger than other described plasmids.
- ❖ We observed a weak relationship between chromosome size and plasmid size, and no relationship between chromosome size and plasmid number, suggesting that genomic traits are independent in soil.

## Significance

- ❖ We provide a specialized resource for soil microbiome studies so that functional content, host associations, and dynamics between soil microbes can be better understood.



Summary of RefSoil plasmids: (A) Percentages of RefSoil microorganisms with (blue) and without (green) detected plasmids. (B) Distribution of the number of plasmids per RefSoil microorganism.