

A Nitrogen Fix

At least one beneficial microbe, *Gluconacetobacter diazotrophicus*, can be incorporated into a plant's tissues to boost its ability to fix nitrogen from the atmosphere.
Firm: Azotic Technologies

The Plant Microbiome

Just as humans have a microbiome inhabiting the gut and skin surface, plants have communities of symbiotic microbes living in their tissues, leaf surfaces, and root zone. Start-ups are creating designer groupings of beneficial microbes to increase water and nutrient stress tolerance and enhance plant health and growth rates.
Firms: Symbiota, BioConsortia

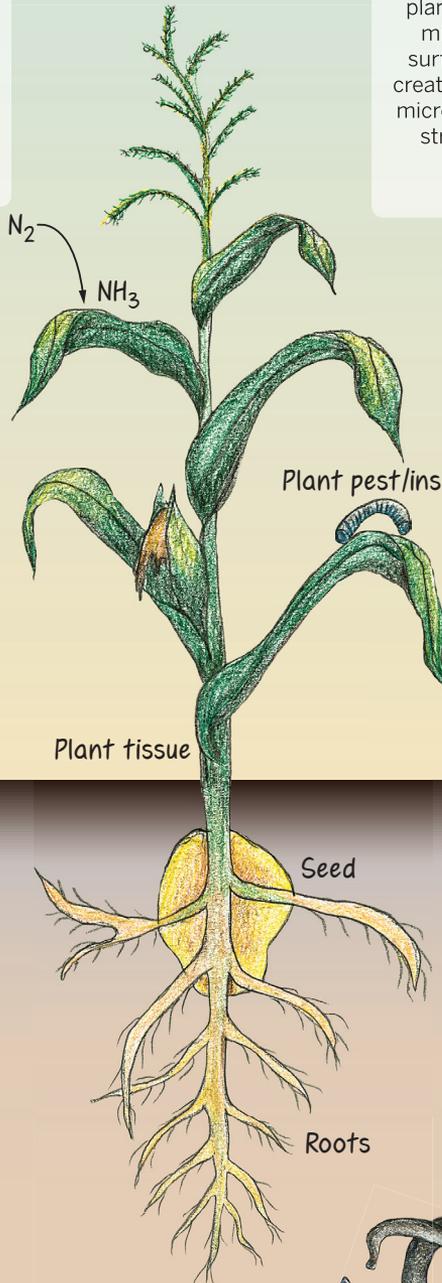
Bioactive Molecules

Bioactive molecules—often enzymes—produced by microbes can help protect plants against weeds, fungal diseases, and pest insects.
Firm: AgriMetis



Weed

Corn plant



Plant DNA



Trait Shifting

Some symbiotic microbes shift the performance of a plant's genetic traits by controlling gene expression.
Firm: BioConsortia

Soil bacteria



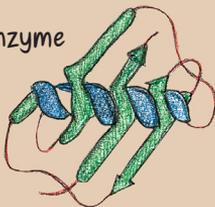
Microbes From Soil

Soil is a major source of microbes and bioactive substances that benefit plants. Firms use prospecting, gene sequencing, and high-throughput screening techniques to identify new microbial product targets.
Firms: AgriMetis, BioConsortia, Taxon Biosciences

Giving Seeds A Head Start

Most biological products can be applied via a seed coating. As the plant grows, it can incorporate the microbes into its tissues, surfaces, and root zone.
Firms: Various

Enzyme

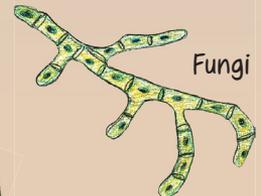


Friends In Low Places

Beneficial microbes living in the root zone can help plants ward off nematodes, fungal diseases, and weeds.
Firm: Taxon Biosciences



Nematode



Fungi