

The sweet world of soil microbiology

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Using classroom, hands-on activities can help instructors to communicate difficult scientific concepts and stimulate student thinking. Despite its importance, the diversity in soil microbes can conceptually be difficult to teach, especially in natural resource classrooms composed primarily of undergraduates who have had little exposure to microbiology. That's where the candy comes into play.

Stephanie Yarwood and Elizabeth Sulzman (now deceased), Oregon State University, report on the sweet world of soil microbial diversity in the 2008 *Journal of Natural Resources and Life Sciences Education*.

This article describes two activities that introduce students to soil microbial diversity and show strategies that soil microbiologists use to better understand life within the soil. With a minimal investment of time and resources, an instructor can use familiar items to introduce abstract ideas.

In one activity, an opaque bag filled with various types of candy is used to represent a soil microbial community. This bag includes candies of several different shapes and sizes, each representing a unique soil microorganism. The physical appearance of the candy is a substitute for the phenotypic and genetic diversity that microbiologists would find in a soil microbial community.

Small student groups work to organize the candy. They base their characterizations on the physical appearance of candy pieces as a proxy for microbial diversity. At this point students decide what characteristics

of the candy should be used to define groups. Students are asked to think about the various ways that microorganisms can be defined (for example, by the way they look or function).

"In-class activities can be helpful to demonstrate the complexity and importance of the soil microbial world. These activities are a fun, creative way to engage students and to teach them about an important aspect of soil microbiology." says Dr. Yarwood.

After participating in these activities, students' assessment scores increased by 35%, and final exam results showed that a high percentage of students retained the major concepts demonstrated.

Source: Soil Science Society of America

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