Exploring plants and soils:
Root printing

Summary:
Plants produce a number of exudates below the soil, some are for defense and others to encourage a diversity of organisms around their roots. A number of these organisms help to produce the nutrients the plants need via the n and c-cycles.

The tips of the roots produce the most sugars so you tend to see a higher and more diverse community of organisms. These bacterial communities fluctuate along the length of the root as each area provides a different niche.

Additionally it shows the impact of addition of soluble minerals ability to be taken up by vegetation and their likelihood of being present in the runoff.

Leanring Objectives:
- Understanding of ecological niches in plants below ground

- Understanding of symbiotic relationships

Equipment:
- Roots

- Kettle

- Soft bristle brush

- Petri dish with nutrient agar

- Marker pen

- Baking paper

Preparation:
- Estimated time 50 minutes.

- Petri dishes, in not bought pre-made 30 mins

- Root material from various sites

Time Required:
Introduction 2 minutes, can look at images of some of the organisms associated with root communities.
Extract a number of plant roots, 10 minutes.
Prepare roots, 5 minutes.
Apply root to agar, 5 minutes.
Label and place in a dark, warm location.

Total timing 15-20 minutes.

Cultivation will be ~5-7 days.

Background Leanring Needs:

- Understanding of symbiotic relationships.

Risk Assessment:

Hazard	Liklihood	Severity	Mitigation
Injury illness from soil ingestion	Low	Medium	Use gloves when handling the soil
Illness from culture growth on agar	Medium	Medium/High	Wear gloves when handling petri dishes
Site/local specific risks	Unknown	Unknown	Anyone running this activity is advised to conduct a risk assessment for the specific site and conditions

Description of Activities:

1. Extract a number of plant roots, cleaning off the soil gently so as not to loose the tips and delicate filaments. Rolling the back side of a trowel can loosen the soil aggregates.
2. Use the brush, sterilized by holding it over steam of the kettle, to brush off the remaining soil
3. Cut a circle of baking paper and again hold this over the steam to clean it
4. Place the root on to the agar and use the baking paper to press all the roots on to the agar
5. Label and place in a dark, warm location. Check back in 3-7 days depending on environmental tempreature.


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Perennial
Rye-grass
Root Print
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