Rich $oil

Grant and CJ

HI-Moes
Hawaii Island Meaningful Outdoor Experiences for Students

Question

What is the difference of nutrients left in the soil around native, and non-native plants?

Uluhe Fern (native)

Kahili Ginger (non-native)

Hypothesis

Non-native plants leave the most nutrients in the soil compared to native plants which absorb more.

Grass
Non- native

Materials

- plastic bags
- soil test kit
- mini pickaxe (optional)
- shovel (optional)
- find six different plants (some native some non-native)
- We chose these…

Our Plants

Sphagnum Moss

- Non-Native
  - **Grass** (form of "Hilo Grass")
  - **Sedge** (*Pycreus polystachyos)*
  - **Moss** (sphagnum genus)
  - **Kahili Ginger** (*Hedychium gardnerianum)*
- Native
  - **Ohia** (*Metrosideros polymorpha)*
  - **Uluhe** (*Dicranopteris linearis)*

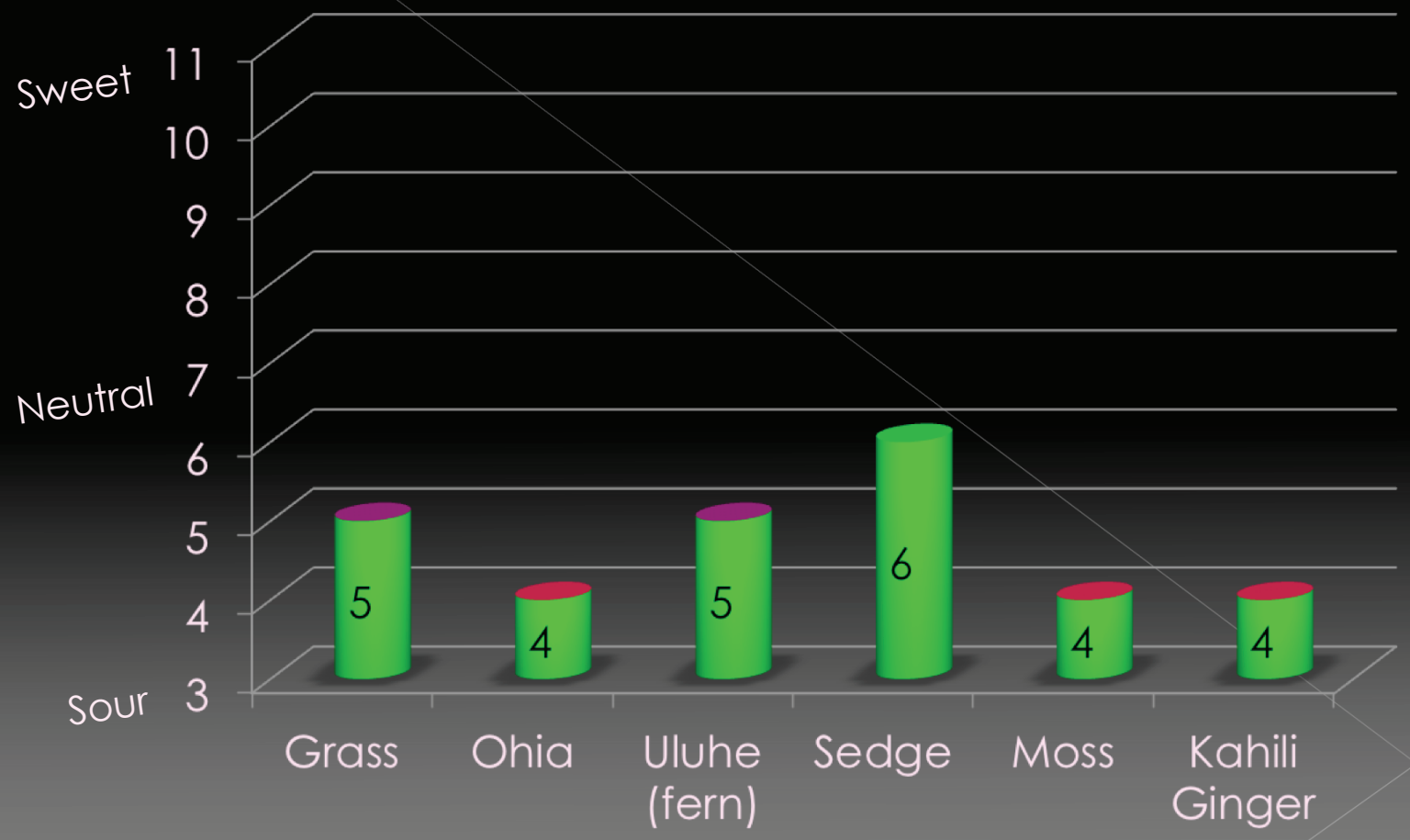
Procedure

- Locate the Native and Non-Native Plants
- Use a shovel or other tool to gather soil directly beneath the plant and within its roots
- Put soil (about ½ cup) in a plastic bag and seal it shut
- Label the bags with the plant name
- Use a soil test kit to test each plant individually. Test the soil for ph, nitrogen, and phosphorous.

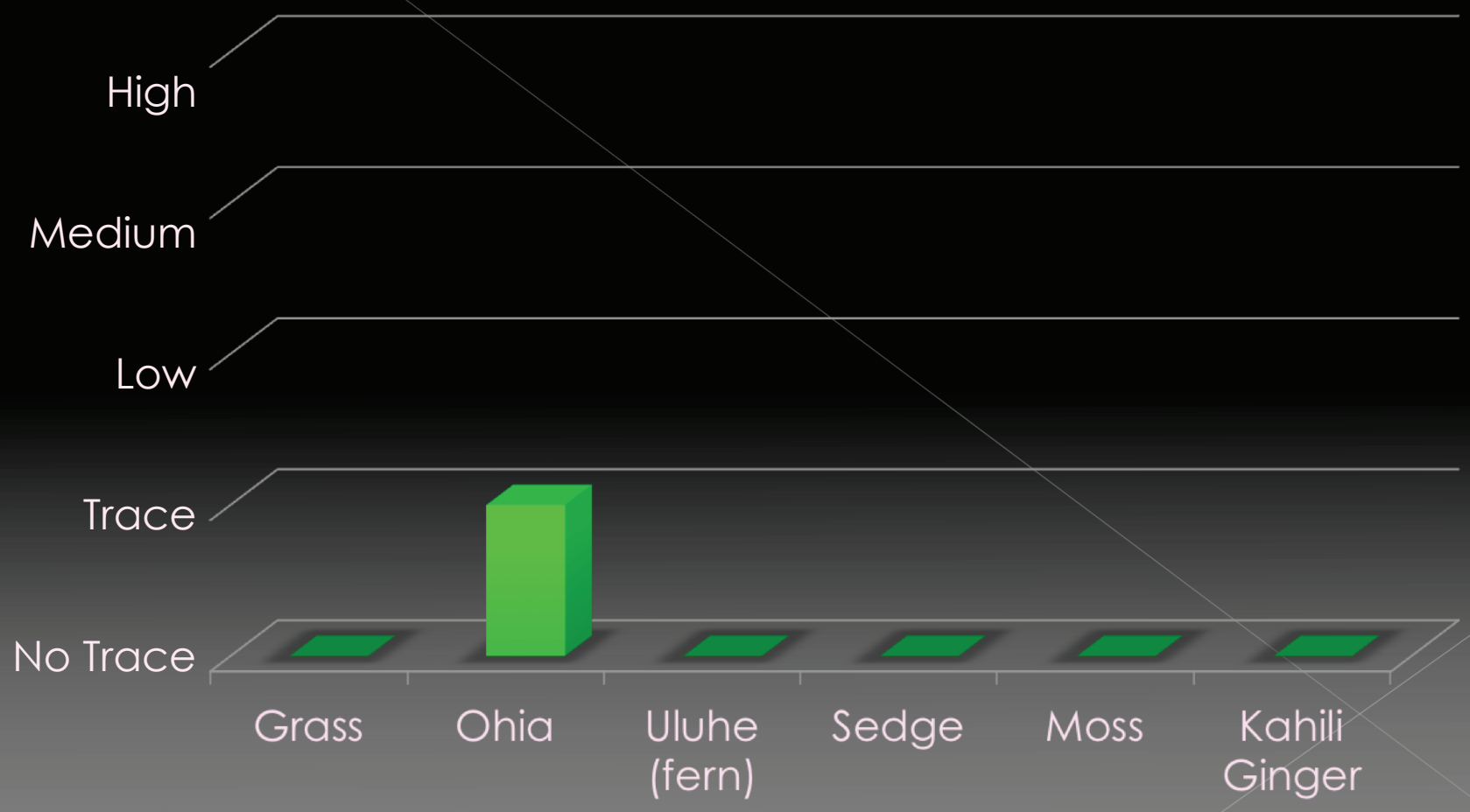
Data Received

Plant	Nitrogen	pH	Phosphorous
Grass	No trace	5.0 (light green)	Trace
Ohia	Trace	4.0 (yellow)	Trace
Uluhe (fern)	No trace	5.0 (light green)	Trace
Sedge	No trace	6.0 (light blue	High
Moss	No trace	4.0 (yellow)	Low
Kahili Ginger	No trace	4.0 (yellow)	No trace

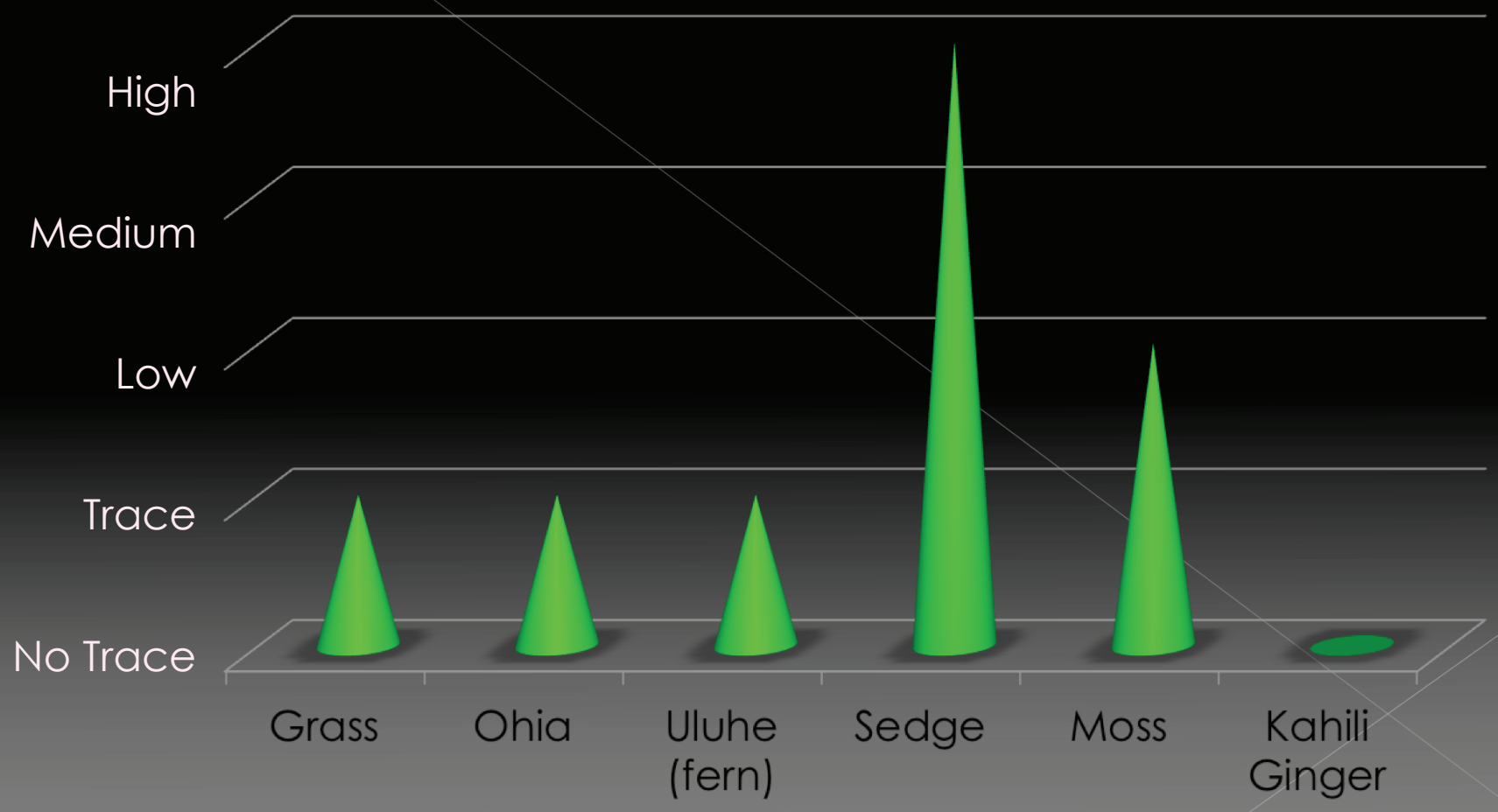
pH Test


Sweet
Neutral
Sour
11
10
9
8
7
6
5
4
3
5
4
5
6
4
4
Grass
Ohia
Uluhe (fern)
Sedge
Moss
Kahili Ginger

Nitrogen Test



Phosphorus Test



Data Analysis

- Based on the results received from our testing, it seems that native and non-native plants leave about the same amount of minerals in the soil.
- The same amount of nitrogen is left in the soil around each of the plants except for the Ohia, which left only a trace of nitrogen. So only one plant, a native one, left nitrogen in the soil for other plants.
- The pH tests shows that all of these plants are able to thrive around a more acidic pH. Sedge was found in the soil that had the best balance of acidity and alkalinity compared to the others.
- Almost all of the plants left only a trace of phosphorous however one left a considerably large amount . Sedge left a high amount of phosphorous in the soil. This native plant, was able to leave phosphorous for other plants.

Conclusion

Nitrogen is a very important mineral because it's involved in almost all of the biochemical processes that support plant life. Since the soil that was found beneath the native Ohia tree was the only soil that had any trace of nitrogen, it is safe to say that native Ohia is better for the environment because it can leave more nitrogen for other plants.

Different plants are able to thrive at certain pH levels. All of these plants, native or non-native were able to thrive around the same pH balance. The pH tests did not have a substantial difference.

Phosphorous is another very important mineral in the sustainability of plants. Plant life cannot exist without phosphorous, which is obtained directly from the soil. Most of the plants left only a trace of phosphorous however one plant in particular left a high amount of phosphorous, Sedge. Sedge, a non-native plant, left tons of phosphorous in the soil for other plants to use.

Our testing did not support our hypothesis however we believe that the outcome was just as beneficial.