A System for Quantifying Biological Oxygen Demand

SO-110 Oxygen Sensor AO-003 Connection Nut

Introduction:

In this study, the researchers show the techniques and instruments they used to study biological oxygen demand. They both discuss methods other researchers have used and create their own system for measuring changes in oxygen. Respiratory changes can help people understand "global carbon cycles, microbial metabolism, postharvest quality, and compost stability." These researchers measure how oxygen decreases in a closed system to show respiratory adjustments.

Set Up:

The researchers create a simple system using a galvanic cell oxygen electrode with a system that collected the information. This system uses Apogee Instruments' galvanic-cell oxygen probes (SO-110), which measure the partial pressure of oxygen. The probes are attached to a standard canning jar lid that can be fitted to any size jar, and they used different sized jars (125 mL to 2 liters). Additionally, canning jar lids are modified to include a hole to accommodate the sensor. To make sure the hole is airtight, they also used a custom nut from Apogee Instruments (AO-003).

Results:

Smaller jars cause faster changes in oxygen levels and therefore excel for objects or organisms with low oxygen consumption rates. Larger jars work better for longer studies because oxygen takes longer to deplete, and the jars can remain sealed longer before oxygen needs to be replenished. There are many ways to adapt this system in researching respiration.

Conclusion:

This study and reflection of best practices covers many different techniques to improve a study of oxygen depletion.

Application Summary

Summary:

Apogee Instruments' SO-110 and AO-003 are used to research changes in respiration in a closed system, as well as best practices for future studies.

Apogee Sensors Used:

- SO -110 Oxygen Sensor
- AO-003 Connection Nut

Organization:

Crop Physiology Laboratory, Department of Plants, Soils, and Climate at Utah State University

Location:

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Reference Article:

An Automated Multi-Chamber System for Quantifying Biological Oxygen Demand

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