Fruit & Vegetable Respiration Analyzer

Application

After harvesting, fruits and vegetables remain independent living organisms that must carry out respiration to sustain life. Respiration is the primary physiological metabolism of horticultural products after picking. Respiration rate is an important indicator for evaluating respiration intensity, and is essential for studying postharvest physiological changes, storage, transportation, and preservation of fruits and vegetables.

This respiration analyzer is equipped with a dual-wavelength infrared CO_2 analyzer and a 7-inch Android touchscreen. It is specially designed for measuring and analyzing the respiration rate of fruits and vegetables under various storage conditions, including ambient temperature storage, cold storage, controlled atmosphere (CA) storage, and supermarket refrigerators.

The instrument allows users to select respiration chambers of different volumes according to the size of fruits and vegetables, which shortens equilibrium and measurement time. It directly displays and records real-time CO_2 concentration, O_2 concentration, C_2H_4 concentration, temperature, humidity, and their change curves.

Features

1. Measures CO_2 concentration, O_2 concentration, ethylene (C_2H_4) concentration, temperature, and humidity.

2. Android operating system for convenient human-machine interaction.

3. 7-inch high-definition touchscreen with simple operation and clear interface.

4. Gas flow can be directly set on the instrument to test respiration rate under different flow rates.

5. Special dynamic analysis software displays the experiment process in real time on the Android screen, eliminating the need to transfer data to a computer for sorting and analysis.

6. Allows input of sample information: type, name, weight, origin, harvest date, etc.

7. Supports WiFi and 4G connectivity; data can be uploaded wirelessly to the cloud platform.

8. 16G storage capacity, capable of storing more than 100,000 data records.

9. Data can be exported directly to a USB flash drive via USB port.

10. Supports direct printing and uploading of test results after measurement.

11. Supports GPS positioning.

Technical Specifications

1. Carbon Dioxide (CO_2)

Detection principle: Non-dispersive infrared (NDIR)

Sensitivity: CO_2 difference detection within 1 second

Measuring range: 0–5000 ppm

Accuracy: ±3 ppm

Resolution: 0.1 ppm

2. Oxygen (O_2)

- Detection principle: Electrochemical

- Measuring range: 0–100%

- Linearity: ≤±2% F.S.

- Repeatability: ≤±1%

- Response time: 30 s

- Zero drift: ≤±2% F.S./24 h

- Span drift: ≤±2% F.S./24 h

3. Ethylene (C_2H_4)

- Detection principle: Electrochemical

- Measuring range: 0–200 ppm

- Sensitivity: 75±35 nA/ppm

- Repeatability: <±2%

- Response time: ≤90 s

- Zero drift: 0–1 ppm

- Resolution: 1 ppm

- Long-term stability: <2% per month

4. Temperature

- Measuring range: -20–95 °C

- Resolution: 0.1 °C

- Accuracy: ±0.2 °C

5. Humidity

- Measuring range: 0–100% RH

- Resolution: 0.1% RH

- Accuracy: ±0.2% F.S.

6. Power Supply

- 12V 3A power adapter

Respiration Chamber Parameters

1. Small size: inner diameter 40 mm, effective height 80 mm, volume 0.1 L

2. Medium size: inner diameter 60 mm, effective height 89 mm, volume 0.25 L

3. Large size: inner diameter 120 mm, effective height 180 mm, volume 2.0 L