

Soil Salinity and Impact On Yield of Sugar Cane

LAQUA⁺twin is a series of pocket ION meters. Using Ion Selective Electrode (ISE) technology, they are available for measuring Conductivity, Calcium, Nitrate, Potassium, Sodium, Salt concentration and pH measurement. Using just a tiny amount of sample, the LAQUA⁺twin proprietary flat sensors can quickly and accurately measure the values of the chemical parameters in the field.



Introduction

Sugar cane is a major source of sugar used in the food industry today. The growth of sugar cane crops is impacted adversely by soil salinity. Thus, it is necessary to determine the sodium content of the soil in areas where sugar cane crops are being grown.

Sodium is a mineral constantly present in soil, but an excess of it can cause the yield of sugar cane to dwindle. Thus, it is beneficial to measure the salinity of soil on which sugar cane crops are grown.

To determine the sodium content of soil, the Horiba LAQUA⁺twin Na⁺ meter can be used. This is an easy and quick method used to consider the sodium content of canned products.

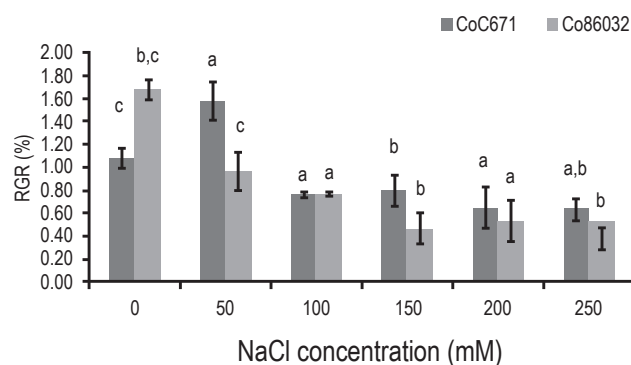
Method

1. Sodium is water soluble, thus 1g soil samples can be mixed with 4g of warm water and shaken thoroughly.
2. After 5 minutes, the resultant mixture can be strained to produce a saltwater sample from the soil.
3. A small sample can be extracted via pipette
4. This is placed on the sensor of the LAQUA⁺twin Na⁺ meter and the sodium content is measured after one minute.
5. To repeat sampling, wash the sensor with tap water and pat dry with a paper tissue.

Results and Benefits

The use of the Horiba LAQUA⁺twin Na⁺ meter to measure the sodium content of soil will improve farmers' knowledge of the best

land to grow sugarcane crops and hence enable optimized yield. The LAQUA⁺twin Na⁺ meter is small and compact; convenient to carry around in your pocket for easy on-site testing. Its easy-to-use interface is simple for anyone to use the LAQUA⁺twin Na meter.

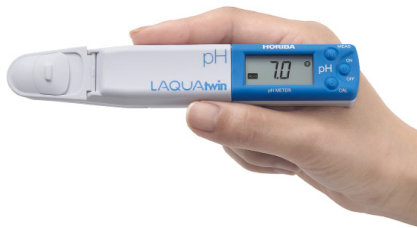


Effects of NaCl stress on the physiological and biochemical responses in sugarcane; relative growth rate

Avinash Karpe, Ashok A. Nikam, Krunal P. Chimote, Sachin B. Kalwade, Prashant G. Kaware, Harinath Babu, Rachayya M. Devarumath, and Penna Suprasanna "Differential responses to salinity stress of two varieties (CoC 671 and Co 86032) of sugarcane (*Saccharum officinarum* L.)" African Journal of Biotechnology Vol. 11(37), pp. 9028-9035, 8 May, 2012

LAQUAtwin

Unique Features



LAQUAtwin: the only meters with flat sensor technology.

HORIBA's highly-sensitive, flat sensor technology opens up new possibilities for sampling and sample types. Only a small amount of sample is required, so you can easily sample in situ without the need for beakers or other labware. Sensors are easily replaced as required.

Calibrate and measure at the touch of a button—the smiley face will tell you when the result can be read.

Hassle-free automatic calibration with a few drops of standard solution reassures you of your measurement accuracy. Two-point calibration is also possible.*1

*1 Except for B-711



LAQUAtwin is fully waterproof and dustproof.

The meter and sensor are fully waterproof*3 and dustproof, so you can take it anywhere.

*3 IP67 rated. Will withstand immersion for 30 minutes at 1 m. Not suitable for underwater use.

Carry case comes as standard for handy portability.

The compact carry case contains everything you need for your measurements, including the standard solution and sampling sheets.

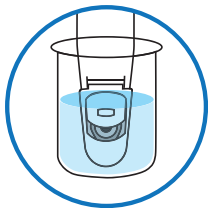


1 X 6

One meter, six methods.

Only LAQUAtwin allows you to be this flexible!

Choose the best method according to your sample, your situation, and your needs.



01 Immersion

When you're in the lab, you can test the sample in a beaker. Ensure the sensor guard sliding cap is open.



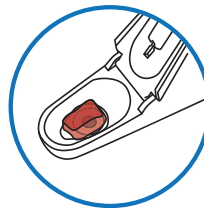
02 Scoop

Use as a scoop to test water eg from a river. A vertical scoop for an aquarium is also available with a unique sensor guard.



03 Drops

Place a drop of the sample onto the sensor with a pipette. LAQUAtwin meters can measure sample volume as low as 0.1mL



04 Solid Samples

Foods containing some moisture can be tested by placing a small piece directly onto the sensor.



05 Powders

LAQUAtwin meters can also test dry powders. Simply place the powder sample onto the sensor and drop on your defined volume of pure water.



06 Paper and textiles

To test sheets of paper and textiles, cut up the sample into small pieces and place directly onto the sensor. Drop on your defined volume of pure water.

pH



Accurate pH measurements in a few seconds, from a single drop.

Water pH varies in different environments, and a slight change can often have a major effect.

Whether you need to keep the pH of an aquarium within tight limits, are checking for the acidity of rain water or for the quality of meat and fish products, LAQUAtwin compact pH meters are ideal for you. No matter where and when you need to test.

COND



Determine water conductivity with as little as 0.12 mL of sample.

The conductivity of rain water is a trusted guide to determining atmospheric purity. In agriculture, measuring the conductivity of soil allows farmers and agronomists to determine optimum fertilizer usage and check the 'health' of soil after salt water damage. The LAQUAtwin meter makes conductivity testing simple, anywhere.

Na+



Only compact meter for a quick and reliable measurement of sodium ion at the scene using ion selective membrane.

Lineup

K+



Only compact meter for a quick and reliable measurement of potassium ion at the scene using ion selective membrane.

NO3-



Only compact meter for a quick and reliable measurement of nitrate ion at the scene. Special application packages for crop (B-741) and soil (B-742) are also available.

Ca2+



Only compact meter for a quick and reliable measurement of ionized calcium at the scene using ion selective membrane.



<http://www.horiba.com/laquatwin>

IMS

HORIBA Group is operating Integrated Management System (IMS)
ISO9001 JOA-0298 / ISO14001 JOA-E-90039 / ISO13485
JOA-MD0010 / OHSAS18001 JOA-OH0068

