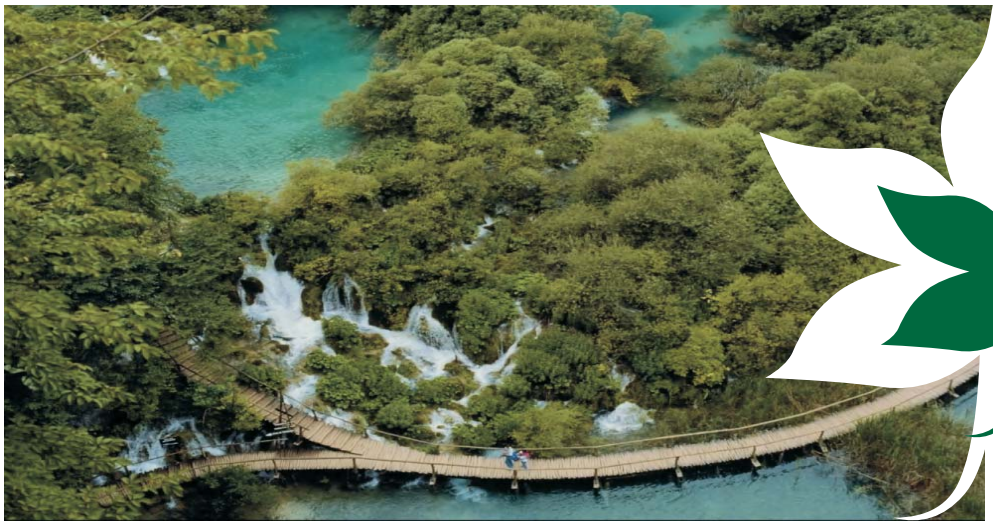

PLANT MOISTURE SYSTEMS

Agriculture/Horticulture
Plant Growth Studies

environmental and botanical instrumentation

Skye

Updated 10/10/07

Introduction

Skye have been manufacturing plant moisture systems since 1987. For nearly 20 years these instruments have been used to study the demand for water in plants by measuring the plant moisture potential or stress.

The demand for water in the plant is a combination of many factors including availability of water to the roots, environmental factors (for example temperature, wind, humidity, solar radiation) and the ability within the plant to move water.

The plant moisture potential measurement helps relate these factors to the state of the plant. It can be used to study the water need of the plant and the effects the local environmental conditions are having.

The plant moisture potential is measured using a Scholander type pressure chamber, otherwise known as a Plant Moisture System. These plant moisture systems have also been used for sap extraction studies. Skye Instruments Ltd has 2 different types of systems for this measurement and they are described below.

Analogue System

The low-cost analogue system, has a traditional dial gauge readout.

The water potential pressure of the plant sample is read off the large, clear dial gauge when moisture is first seen coming from the freshly cut stem.

The gauge has a maximum pressure needle which can be used to 'freeze' the reading, allowing the user to concentrate on the specimen and not on the gauge.

Digital System

The Digital System uses an accurate pressure transducer to give a digital readout via a clear display - in which the figures can be seen even in strong light.

Chamber Head

In collaboration with users of Plant Moisture System, we have 2 designs of head. The low pressure head has only one part and the seal is made by the gas pressure inside the vessel pushing against the soft rubber seal. This makes it very suitable for fleshy samples. The high pressure head, is recommended for more woody samples. Here the stem of the plant tissue is sealed in the neck of the vessel by a biconical compression seal.

Both heads are designed with a short seal length to accommodate 'awkward' samples with short petioles. Sealing pressure may be increased at will, even when the vessel is pressurised, by turning the seal clamp, should leakage occur.

The Skye system minimises damage to the stem by ensuring only the minimum pressure is applied to the petiole.

Gas Supply

In a laboratory the gas for pressurisation would normally be from large commercial cylinders of nitrogen. These would normally be rented together with a reduction valve from the local supplier. This is however not acceptable for portable use, and thus we offer for sale, small very portable compressed air cylinders with reduction valves. These may be refilled at thousands of centres worldwide, most commonly located in university towns and cities.

SPECIFICATIONS

	Analogue			Digital		
	SKPM 1405/40	SKPM 1405/50	SKPM 1405/80	SKPM 1400/40	SKPM 1400/50	SKPM 1400/80
Size 152 x 317 x 254mm	✓	✓	✓	✓	✓	✓
Chamber dimensions 135 x 70mm diameter 0.54 litre Volume	✓	✓	✓	✓	✓	✓
System weight - 9kg (Excludes gas bottle)	✓	✓	✓	✓	✓	✓
Operating Pressure 0-40 bar	✓	✓	✓	✓	✓	✓
0-50 bar		✓	✓		✓	✓
0-80 bar			✓			✓
Type of Chamber head suitable Low Pressure (max pressure 40bar)	✓	✓	✓	✓	✓	✓
High Pressure		✓	✓		✓	✓
Dial Pressure Gauge (In units of Bar with max pressure reached indicator)	✓	✓	✓			
LCD Readout 12.7mm height, 2 decade ranges 0.01 Bar / 1KPascal resolution				✓	✓	✓

Supplied as complete systems with a range of sealing apertures
Accessories required : Gas Bottle and Regulator

SAFETY FEATURES

Skye's Plant Moisture System for the measurement of Plant Water Potential has a number of safety features included.

- The main chamber is machined from a single piece of solid, high grade brass. There are no metal joins and seams to fail under high pressures.
- The chamber head is secured using a quick fastening, multi start thread. This design ensures the chamber cannot be pressurised unless the head is secure.
- Each Skye plant moisture system is individually tested to a pressure far greater than the working pressure by an independent test house. A certificate of this test is supplied with every system.
- There is a safety release pressure valve fitted to each system, this is set to automatically evacuate the chamber if the maximum working pressure is exceeded at any time.
- Included in the cost of a Skye system is a pair of safety spectacles and a clear perspex safety shield. These ensure that no leaf or petiole debris can escape and be blown into the user's eyes.

Publications

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Users

UK

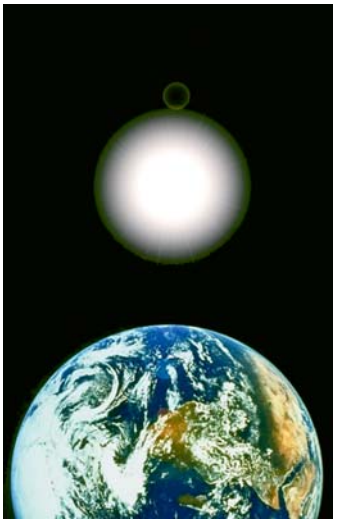
- Forestry Commission Research Station
- Many UK Universities
- Silsoe College, University of Cranfield
- Horticulture Research International, East Malling Research
- Scottish Crop Research Institute
- Macaulay Land Research Institute
- Cambridge University Farm

Overseas

- Agricultural Research Institute, Cyprus
- Danish Institute of Agricultural Science, Denmark
- Debrecen University, Hungary
- University College Dublin, Ireland
- Trinity College Dublin, Ireland
- Central Mining Research Institute, India
- CNR ISAFoM, Italy
- Universita Di Roma La Sapienza, Italy
- Kangwon Forest Research Institute, Korea
- Research Institute of Pomology & Floriculture, Poland
- Universite Autonoma de Madrid, Spain
- Dpto. Biologia de Organismos y Sistemas, Spain
- Fundacion CEAM Centro de Estudios Ambientales del Mediterraneo, Spain
- USDA-ARS, USA

Thousands of customers in over one hundred countries

Skye is a family run company and since 1983 has been exporting instruments to nearly every country in the world. We pride ourselves on customer care and our flexibility when it comes to providing the customer with what they need.



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