

# **INTERNATIONAL WORKING GROUP ON SOILLESS CULTURE**

THE PRESENT SITUATION OF SOILLESS CULTURE  
IN LAS PALMAS, CANARY ISLANDS

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Reprint from IWOSC Proceedings 1973



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## THE PRESENT POSITION OF SOILLESS CULTURE IN LAS PALMAS, CANARY ISLANDS

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## INTRODUCTION

The development of soilless culture has been progressing in Las Palmas, Canary Islands. Due to the impact caused by the meeting of the Second International Congress on Soilless Culture in November 1969 in Las Palmas and the good results obtained in the various installations, more and more farmers are showing interest in this technique and the number of installations is continually increasing. At the present time there are greenhouses with soilless culture installations exclusively dedicated to the production of cucumbers, tomatoes, lettuce, flowers, etc., and where production has greatly exceeded the results in the local soil - for example, 130,000 kg per hectare of cucumbers have been obtained in one of the greenhouses last winter. In view of all this development the 'Caja Insular de Ahorros de Gran Canaria' has created an institution with a well-equipped laboratory to help the farmers, trying at the same time to distinguish and solve their problems.

## SERVICES OF THE INSTITUTE FOR SOILLESS CULTURE

As the most common unknown factor to the farmer is the nutrient solution, advices are mainly given about the preparation and maintenance of the composition of the nutrient solution. Each solution is analysed weekly and the farmer is advised about the composition and the nutrients to be added. Determinations are made for the macronutrients nitrate, phosphate, potassium, calcium and magnesium, and for the micronutrients manganese, boron, molybdenum, zinc, copper and iron, and furthermore the electric conductivity, pH, chloride and sodium. Additionally, the water for the preparation of nutrient solutions is also analysed, which is necessary due to the differences in quality and chemical composition of water throughout the island. If required we also analyse leaves, seeds, etc. In order to be able to do these things the laboratory has been equipped with the most modern analytical instruments and is operated by a qualified and experienced staff. The institute also has a section dedicated to phytopathological problems. The section Phytopathology is managed by a specialised technician who decides on treatments against diseases and pests and sets out rules for the good health of the cultivations, after having examined roots, leaves, insects, fungi, etc.

## INVESTIGATIONS AT THE INSTITUTE FOR SOILLESS CULTURE

Cultivation as such, with routine analysis and control as previously outlined, normally presents no problems. However, we believe that the most important aspect of soilless culture is the investigation of the problems which arise when soilless culture is extended to a commercial scale. Various basic factors exist, which occur during the period of cultivation: the different composition of the nutrient solution at different seasons of the year, variety of seeds, number of plants per square

re meter, different substrates, optimum conditions of humidity and temperature at the different growth-phases and a lot of other factors are variable, of which we ought to, but we do not have sufficient information yet.

For all these reasons it has been necessary to create within the institute a section dedicated to investigations.

As a basic part of the section, we have a specially constructed glasshouse. A brief description of the greenhouse is as follows. In approximately 350 square metres we have installed 16 concrete beds, each of an area of 6.2 square metres, which are set out and connected in a latin square (4 x 4), surrounded by other protecting beds in order to deaden exterior influences for homogenean distribution. The beds belonging to the latin square are fed from four independent tanks (one for each four beds). In this installation we carry out trials with macronutrients, variety of seeds, substrates and also atmospherical conditions such as humidity and temperature. In another part of the greenhouse we have installed 20 small beds (total area 200 square metres), each with its own feeding tank. These beds will be used for experiments on microelements, substrates and generally trials on a smaller scale. All installations are equipped with a programmer for starting and stopping the pumps for irrigation, something which would be very troublesome to do manually. The installation is completed with automatic controls for temperature and humidity.

Finally, for the statistic treatment of the information obtained in the greenhouse, we have a minicomputer, from which we will obtain the necessary statistical information on the results of the experiments.

The experimental soilless culture installations are now in their final state of construction and we soon hope to be able to start with the experiments and to be able to publish the first results for the benefit of farmers all over the world.

#### THE INTERNATIONAL POSITION OF THE INSTITUTE

Many people throughout the world are interested in the problems of soilless culture. Many people need information and teaching. Our aim is to celebrate at frequent intervals, courses for the information and specialisation of technicians and farmers in order to increase knowledge of problems with soilless culture.

We sincerely believe that it is our obligation that our institute, dedicated to the study and investigation of commercial soilless culture shall be at the disposal of all technicians and farmers of the world and shall act as an information centre for everyone who needs advices and for anyone who likes to carry out experiments in the installations of the institute.

For these reasons we propose to IWOSC that our institute may be adopted by IWOSC as the 'INTERNATIONAL CENTRE FOR HYDROPONICS' and that in the immediate future it shall be at the disposal of everyone who wants to work and collaborate with us.

#### RESUMEN

Actualmente existen varias instalaciones comerciales de hidroponía en Las Palmas, donde se cultivan: pepinos, tomates, lechugas y flores. Todas están asesoradas por un laboratorio, bien equipado, creado por el Servicio Agrícola de la Caja Insular de Ahorros de Gran Canaria.

Anexo al laboratorio existen invernaderos diseñados especialmente para efectuar experiencias sobre hidroponía.

Nuestra intención es que en un futuro muy próximo, nuestro instituto sea un CENTRO INTERNACIONAL PARA LA HIDROPONIA en colaboración con el IWOSC.

Nuestra comunicación contiene particularidades sobre los cultivos comerciales y sobre el funcionamiento del instituto.

QUESTIONS AND REMARKS

Question by Mr S.R Victor, Bahamas

What is your sale-price of tomatoes per pound ? What is your break-even point per pound ?

Answer

El cultivo de tomates por procedimientos hidropónicos, solo en verano se cultiva en las Islas Canarias para consumo local. En esta época no se cultivan tomates para exportación

El precio medio alcanzado durante los meses de Mayo, Junio y Julio es de 30 Ptas/kilogramo.

El costo, incluido la amortización de la instalación hidropónica puede estimarse entre 8 - 10 Ptas/kilogramo.

Question by Mrs R. Santos Victor, Portugal

What is the cost of the installation ? How do you make the nutrient solution?

Answer

Se puede calcular que el tipo de instalación comercial para hidroponía que se utiliza actualmente en las Islas Canarias, a base de invernaderos con estructura de tubo galvanizado de una pulgada de diámetro, con techo de film polietileno y camas construidas de bloques de cemento y grava prefabricados, tiene un costo de 200 - 250 Ptas/metro cuadrado.

La solución nutritiva se prepara a base de fertilizantes comerciales. Estos fertilizantes son fundamentalmente: superfosfato de cal, nitrato potásico, nitrato cálcico, sulfato potásico y sulfato magnésico, además de los microelementos. Esta solución una vez preparada se bombea en las camas hidropónicas por subirrigación. El control de la solución nutritiva es semanal, aconsejando a los agricultores la adición de nutrientes y micro-elementos.

Question by Mr A. Panella, Italy

¿Cual es su opinión acerca del futuro de la hidroponía ?

Answer

Creo en el porvenir de la hidroponía. La hidroponía es una técnica especializada de cultivo, que sustituye en muchos casos (países con escasez de agua, mala calidad de sus tierras) a las técnicas convencionales de cultivo en tierra.

El problema fundamental para el desarrollo de la hidroponía, no está en las dificultades de orden técnico, ya prácticamente resueltas; sino en los problemas de tipo económico, es decir, la rentabilidad del procedimiento. Creo que si las personas dedicadas a la explotación de la instalación hidropónica, tienen verdadera vocación, son obedientes a las indicaciones de los técnicos y tratan de mejorar sus conocimientos, los cultivos siempre serán rentables y las producciones aumentarán año tras año.