

MAPS - Modular Agricultural Production Systems

MAPS are tailored for year round continuous production of high value crops like pharmaceutical plants and valuable perishable foods.

Introduction

MAPS are a fusion of space research technology and novel LED light technology. The bio-light innovation company, INTRAVISION Group AS (IVG), developed the technology in cooperation with the Canadian space research institute CESRF (Controlled Environment Systems Research Facility) at the University of Guelph. Several versions of MAPS technology are in trial to advance applications for "food security", pharmaceutical plants (GMO and medicinal) and in production of selected crops like strawberries and herbs.

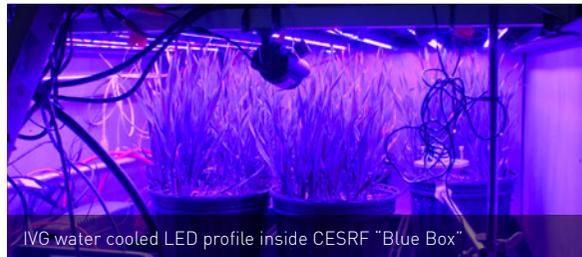


Intravision Group (Norway, China and Canada)

IVG has researched effects of narrow bandwidth lights in biology and biotechnology since 2000. Initial projects were on light within marine biotech and aquaculture in cooperation with European industry partners and research institutes. In 2004 IVG established a cooperation with Philips Lumileds under the EU program, Eureka. Using LEDs to grow turf grass in sport stadiums. From 2009 this work continued on medical and GMO plants through a Eurostar project, which also came to include the Canadian Space Research Institute CESRF. The IVG/CESRF cooperation have included development of several high intensity and multi-band LED lighting systems for the CESRF chambers. These are among the first systems in the world to be outfitted with the full range light spectrum affecting plant growth and morphology: From UVA through the visual light spectrum and into far red light. Ongoing work is focused on understanding both primary and secondary metabolite functions, including flowering, fruit and nutrition compositions on a range of plants and plant products ranging from herbs and strawberries to medicinal/GMO plants.

CESRF - Controlled Environment Systems Research Facility, University of Guelph, Canada

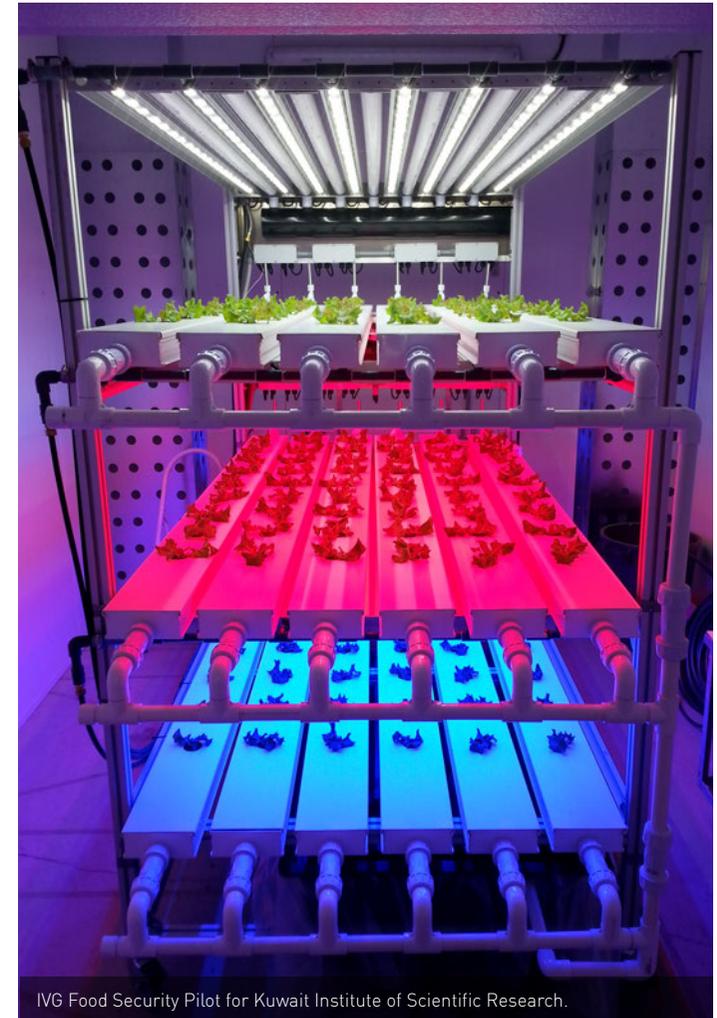
The novel technology and biological findings delivered by CESRF over the last two decades represent Canada's main contribution to the field of biological life support in the context of space exploration. The focus has been on food production for manned space travels, with Mars expeditions as the primary target. Within the space life support research community CESRF is recognized internationally as a leader and they have developed a unique set of research infrastructure designed for plant research in order to replicate the challenging conditions of the Moon or Mars.



The initial «space» question was whether or not food producing plants could efficiently yield in a low atmospheric pressure environment. The unique plant growth chambers at the CESRF "Blue Boxes" were developed as a completely sealed environment with a sophisticated environment monitoring system.

The bonus feature from a plant research point of view, is that these controlled vacuum environments gives unique and instant insight in plants response to any environmental change. Plant carbon uptake response changes in correlation to light spectrum and/or intensity adjustments. The computer monitor system will give realtime feedback, developing an understanding of how the plants adapt to these changes.

MAPS «Smart Energy» technology with optimized light spectrum photoperiods, secures that energy consumption is biologically optimized towards maximizing high quality yield.



IVG Food Security Pilot for Kuwait Institute of Scientific Research.

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