ASIAFRUIT

For fresh fruit and vegetable marketing and distribution in Asia

By Carl Collen

Monday 5th November 2018, 9:54 GMT

Grant great for grapefruit growers

Florida grapefruit industry gets a boost in the shape of four white-mesh screenhouses thanks to a US$3.5m grant

Florida's grapefruit industry, which has been devastated by citrus greening disease in recent years, may find hope in four half-acre white-mesh screenhouses in a research field in Fort Pierce.

The screens are the result of a US$3.5m grant from the US Department of Agriculture (USDA) awarded to the University of Florida.

Studies for the grant will take place inside and outside these structures, where 512 young Ray Ruby grapefruit trees have been in production since September 2013.

The project focuses on growing and protecting high-quality fresh grapefruit inside 14ft-high screenhouses, or 'Citrus Under Protective Screen', also known as CUPS.

Trees have recently been grown in screenhouses to shield the crop from the Asian citrus psyllid, an invasive insect that carries the pathogen that causes huanglongbing, or HLB, commonly known as citrus greening.

The pathogen has reduced Florida's citrus production, including grapefruit and oranges, from 292m boxes during the 2003/04 production season to fewer than 78m boxes at the end of the 2016/17, according to USDA Florida citrus statistics.

"The primary purpose of growing citrus under screen is to exclude psyllids and therefore block transmission of CLas, the bacterial agent of HLB disease," said Arnold Schumann, who is leading the CUPS research as project director.

Schumann is a professor of soil and water sciences at the University of Florida Institute of Food and Agricultural Science's (UF/IFAS) Citrus Research and Education Center (CREC) in Lake Alfred, Florida – the world's largest facility dedicated to the study of a single crop (citrus).

Schumann said the protective screen house drastically alters the citrus growing environment, including the microclimate, tree growth rates, and small pests and pathogens not excluded by the screen.

"A major goal of the grant is to develop a sustainable integrated growing system for fresh market citrus, customised for the modified environment in CUPS," said Schumann. "Research topics include integrated pest and disease management, automated robotic pest scouting, canopy management adapted for CUPS, advanced fertigation, selective light spectrum enhancement, rootstock and scion evaluation, and comprehensive economic analysis."

The funded project will also support new CUPS research in California, to be located at the Lindcove Research and Education Center of the University of California.

"Growers and buyers share a mutual desire to restore the grapefruit industry that was once a highly profitable export business," said Rhuanito Soranz Ferrarezi, a citrus horticulture scientist at the UF/IFAS Indian River Research and Education Center (IRREC).

Grapefruit produced in the Indian River District, situated from Micco just north

of Melbourne, Florida, and as far south as Stuart, Florida, is ranked as the world's highest quality fresh grapefruit product, Ferrarezi added.

Nine scientists and Extension agents will work together to complete the grant objectives, with six collaborators representing Florida, two in California and one in Australia.

Philippe Rolshausen, an Extension specialist with the University of California, Riverside, will serve as a project co-director. Rolshausen strives to identify biotic and abiotic factors that limit the productivity of fruit crops, and his work is to develop and implement sustainable strategies to improve grapefruit production.

At this time, California exports the highest amount of grapefruit, but citrus greening is now present in that region as well and is increasing rapidly. The California citrus industry is now planning to look at CUPS for HLB management, said Rolshausen.

Another collaborating scientist and extension professional is co-principal investigator Jawwad Qureshi, an entomologist working on pest management at IRREC. Qureshi said CUPS provides a different environment for pests and diseases and the use of biological and chemical methods for their management.

The economics of CUPS is an equally important research topic, with Ariel Singerman, a CREC assistant professor of food and resource economics, contributing with a cost-benefit analysis for the grant.

"Proof of concept studies showed that high yielding trees could be grown under protective screen structures for fresh fruit production by completely excluding the Asian citrus psyllid and therefore the HLB disease," said Singerman.

Other horticultural methods the scientists will employ with their research include selective canopy management, sensor-based irrigation, suitable varieties, rootstocks to boost yields, and comprehensive economic analysis, the grant documents show.

The scientists plan to incorporate each step of the research in screenhouses at the UF facilities and on privately owned citrus production lands, Ferrarezi explained.

"The CUPS technology and infrastructure is readily available to growers," said Ferrarezi. "It can be adopted by specialty growers to revitalise the Florida fresh citrus industry and to prevent the California citrus industry from reaching a similar stage of decline."