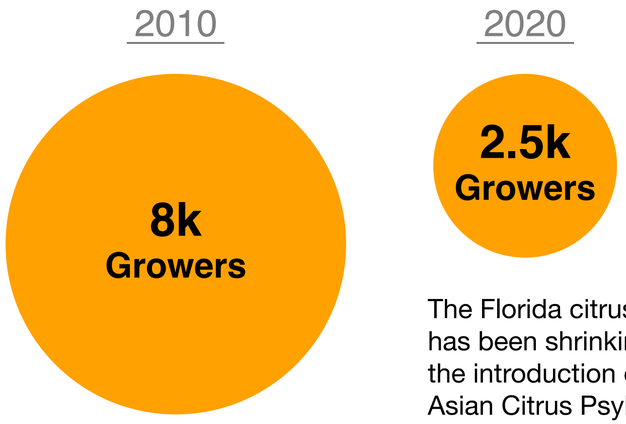
Crop Watch

: Agricultural Security of Tomorrow

Crops in the USA

With growing population sizes and new obstacles due to climate change , the need for food security has never been more imperative to the future of humankind.Currently in the United States two large agricultural industries have been fighting crop diseases caused by insects and the bacteria they host.

Florida Citrus



The Florida citrus industry has been shrinking since the introduction of the Asian Citrus Psyllid in the late 1990's.

Many of these diseases are transmitted through vector insects. In both California and Florida crops, like citrus and grape, are affectied by flying insect like the Glassy Winged Sharpshooter and the Asian Citrus Psyllid. These insects are quite small though which makes detection difficult. Current systems rely on workers visually idetifying symptons on the plant.

Asian Citrus Psyllid (FL,CA)

Glassy Winged Sharpshooter (CA)

Problem Statement

Farmers in the Southern and Western United States have extreme difficulty in detection of insects that bring disease into the fields. Through immediate detection of targeted insects, farmers would be able to slow and stop the spread of crop diseases.

Citrus Greening (*Candidatus Liberibacter*)

How Crop Watch Helps

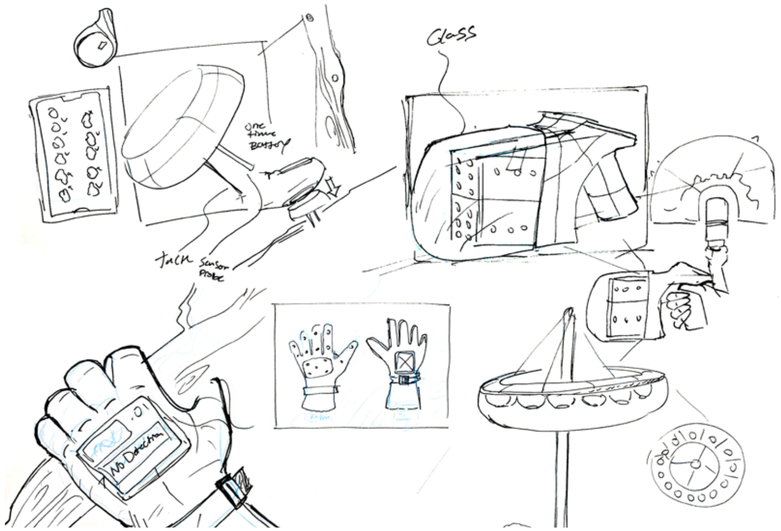
By giving farms the ability to continouly monitor their fields for target insects, giving them a early warning in order to start pest control measures and curb the spread of diseases. Currently there is research into developing new species of citrus and grape that are immune to their respective diseases. However this development takes a long amount of time and growers require short term solutions to contiune production of their crop.

The Crop Watch System

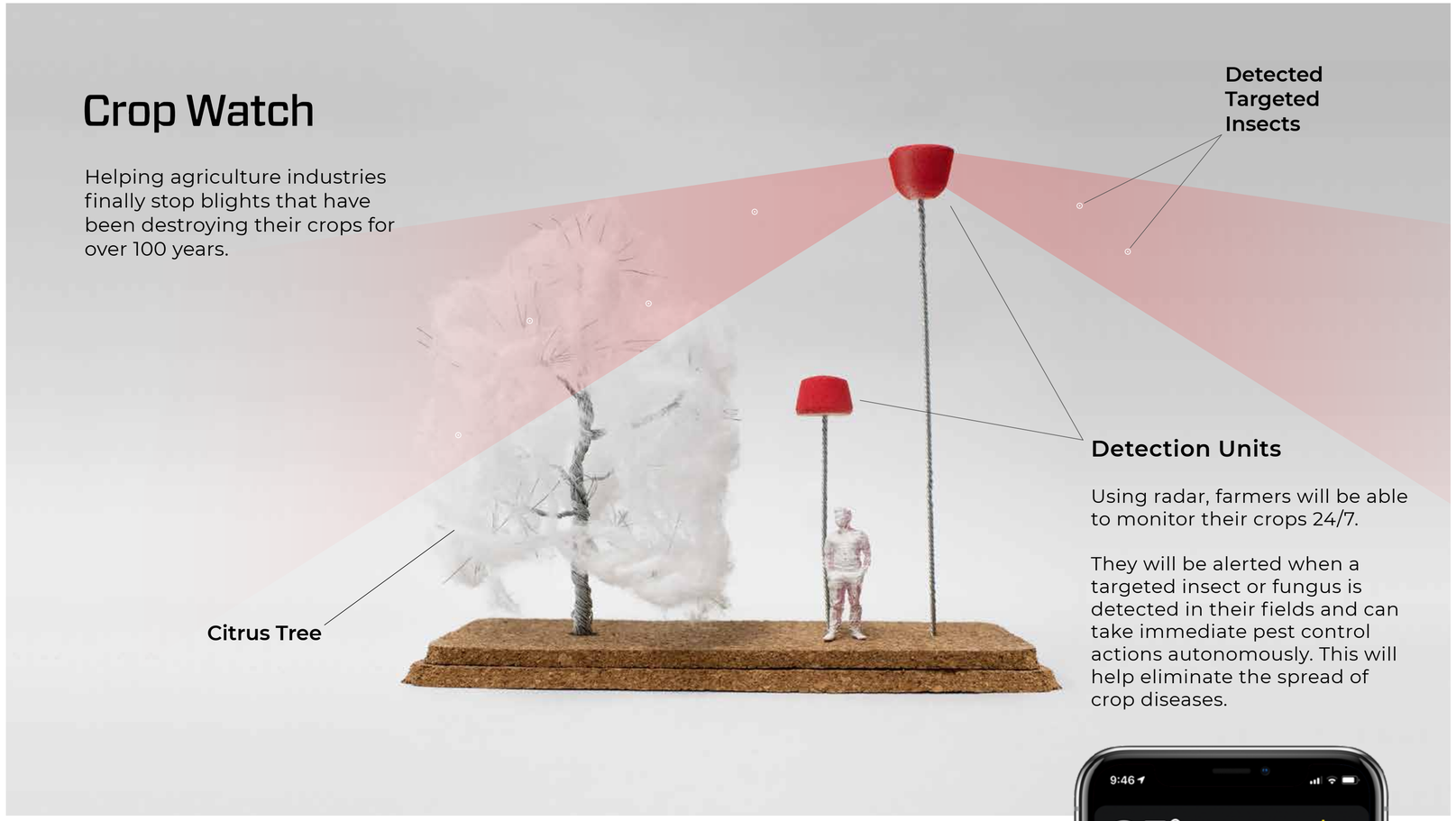
Crop Watch would use a form of radar to detect insects via size and wing beat patterns. The system would use detection units that are postioned atop posts, set at desired heights. This way they can be aimmed downward toward the top of the crop or run at mid height and see into large part of the plant. The radar reveals targeted insects based on size, movement, and wing beat pattern.

Ideation

Ideation phase included moving through ideas of on the plant systems, handheld devices, but ultimatley concludes with the radar being the best way to monitor many plants over large areas of land.



Ideation overlay of a “on the plant” sensor concept.



Crop Watch would also include a suite of mobile and desktop applications. This is where farmers would be able to receive instant updates on targeted insect detection, initiate pest control and review the health of their fields.