



Artificial Intelligence for Precision Grove Management

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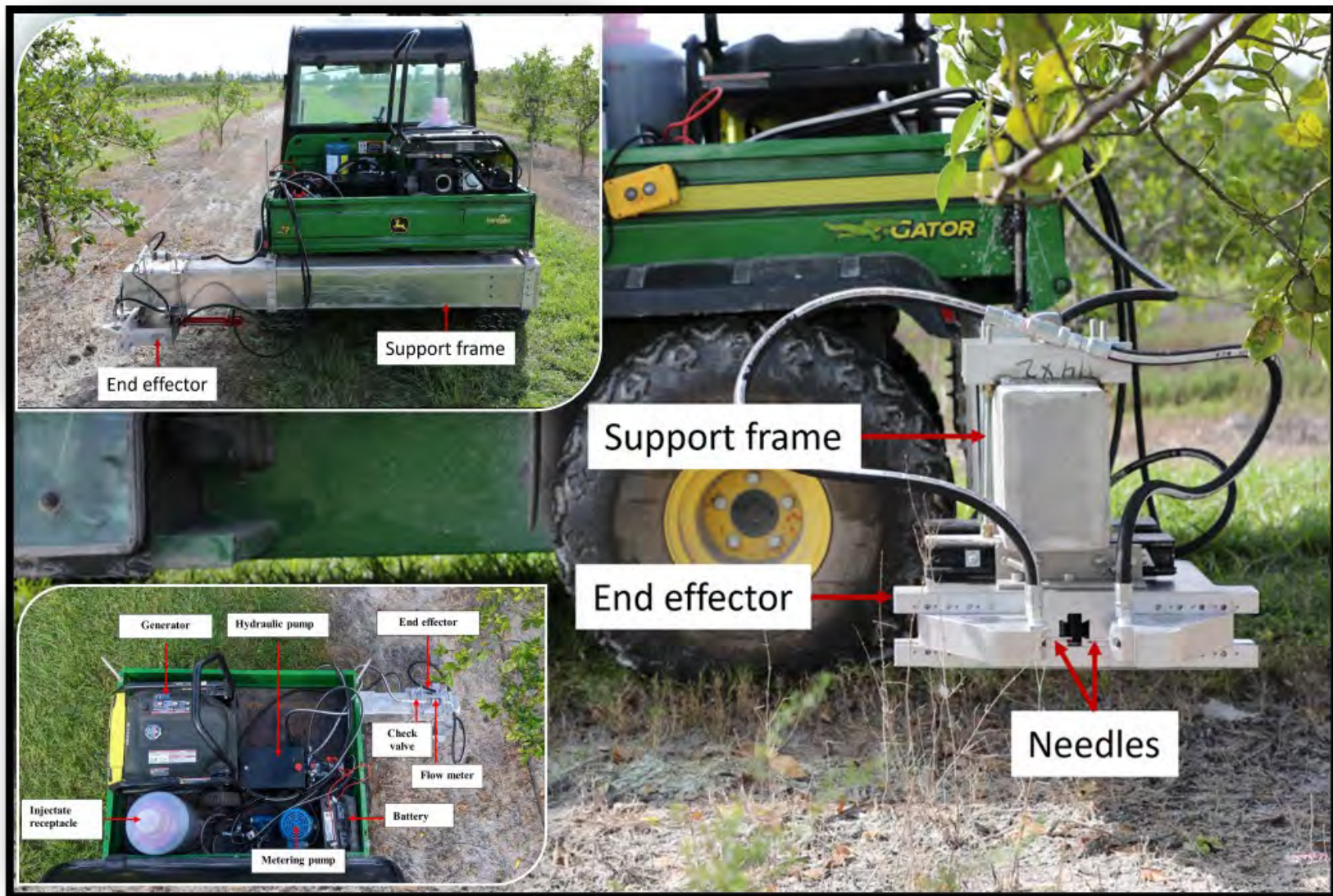
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Automated Delivery System



Automated Delivery System



Psyllid Detector: a web-based application to automate insect detection utilizing image processing and artificial intelligence



ACP: Asian citrus psyllid

LB: Lady beetles

Agroview – sing in



Awards

- 2020 UF Invention of the Year.
- 2021 ASABE AE50 winner (2020 top innovative new product).
- 1st Runner Up at the 2020 Florida Aerospace & Technology Competition.
- Finalist at the 2020 Cade Prize.

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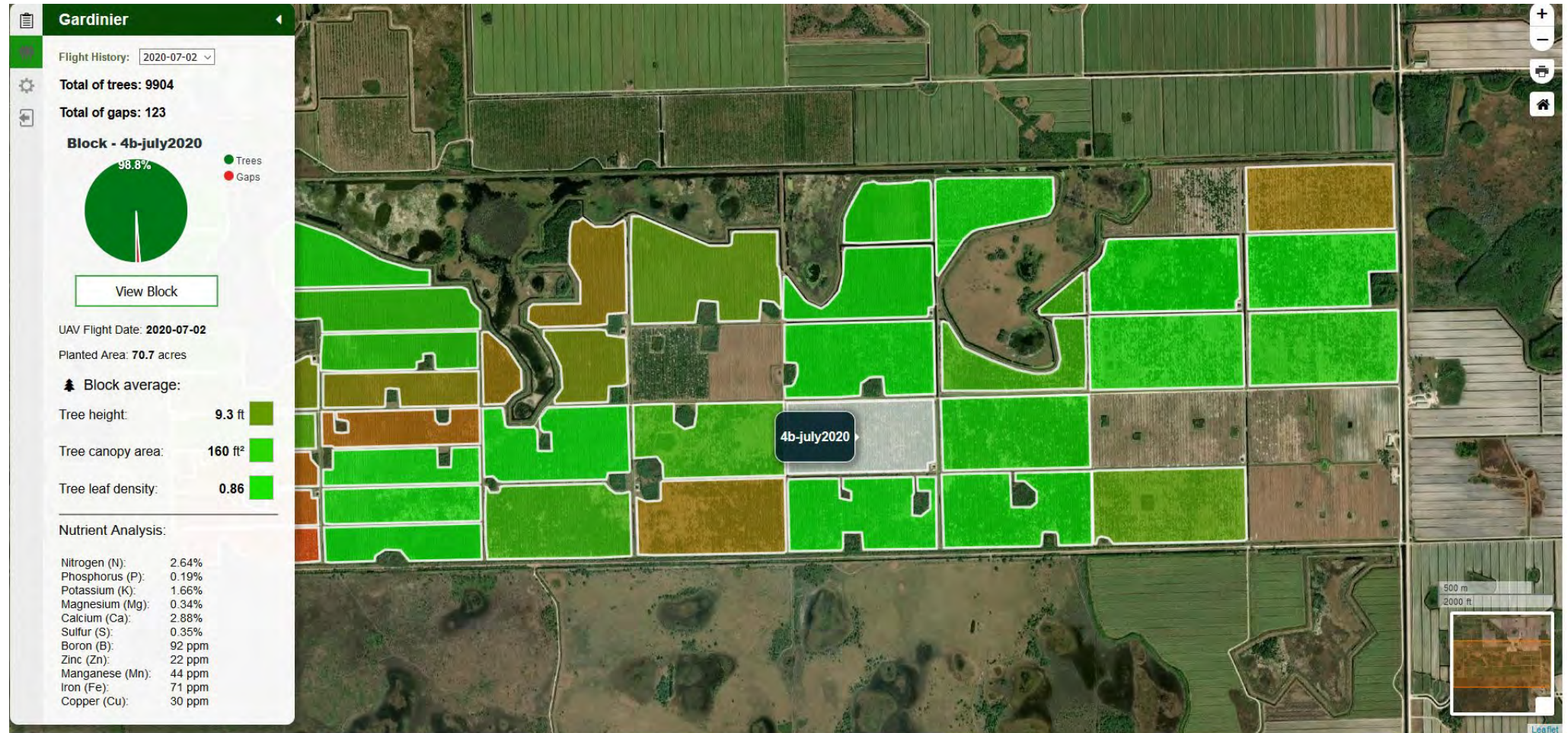
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NVIDIA Applied
Research Accelerator
Award

- UAV and ground-based high throughput phenotyping in citrus utilizing artificial intelligence. Huanglongbing Multi-Agency Coordination (MAC) Group. Duration: 8/1/2019 – 7/31/2021.
- UAV-based high throughput phenotyping in specialty crops utilizing artificial intelligence. Florida Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB). Duration: 1/1/2020 – 8/31/2022.

Agroview – farm analytics



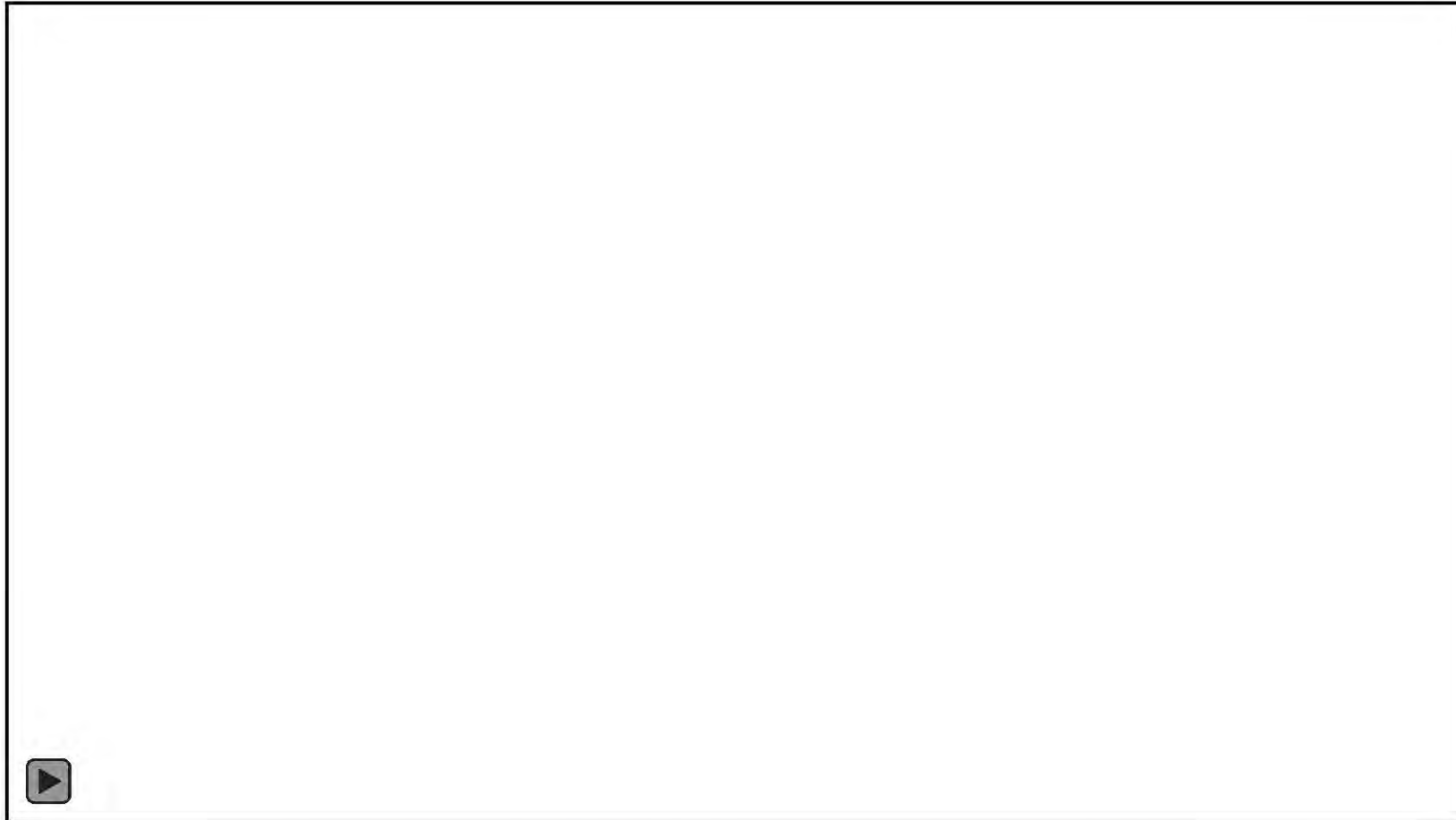
- Ampatzidis Y., Partel V., Costa L., 2020. Agroview: Cloud-based application to process, analyze and visualize UAV-collected data for precision agriculture applications utilizing artificial intelligence. *Computers and Electronics in Agriculture*, 174(July), 105157, doi.org/10.1016/j.compag.2020.105457.
- Costa L., Nunes L., Ampatzidis Y., 2020. A new visible band index (vNDVI) for estimating NDVI values on RGB images utilizing genetic algorithms. *Computers and Electronics in Agriculture*, 172 (May), 105334.

Agroview – field analytics



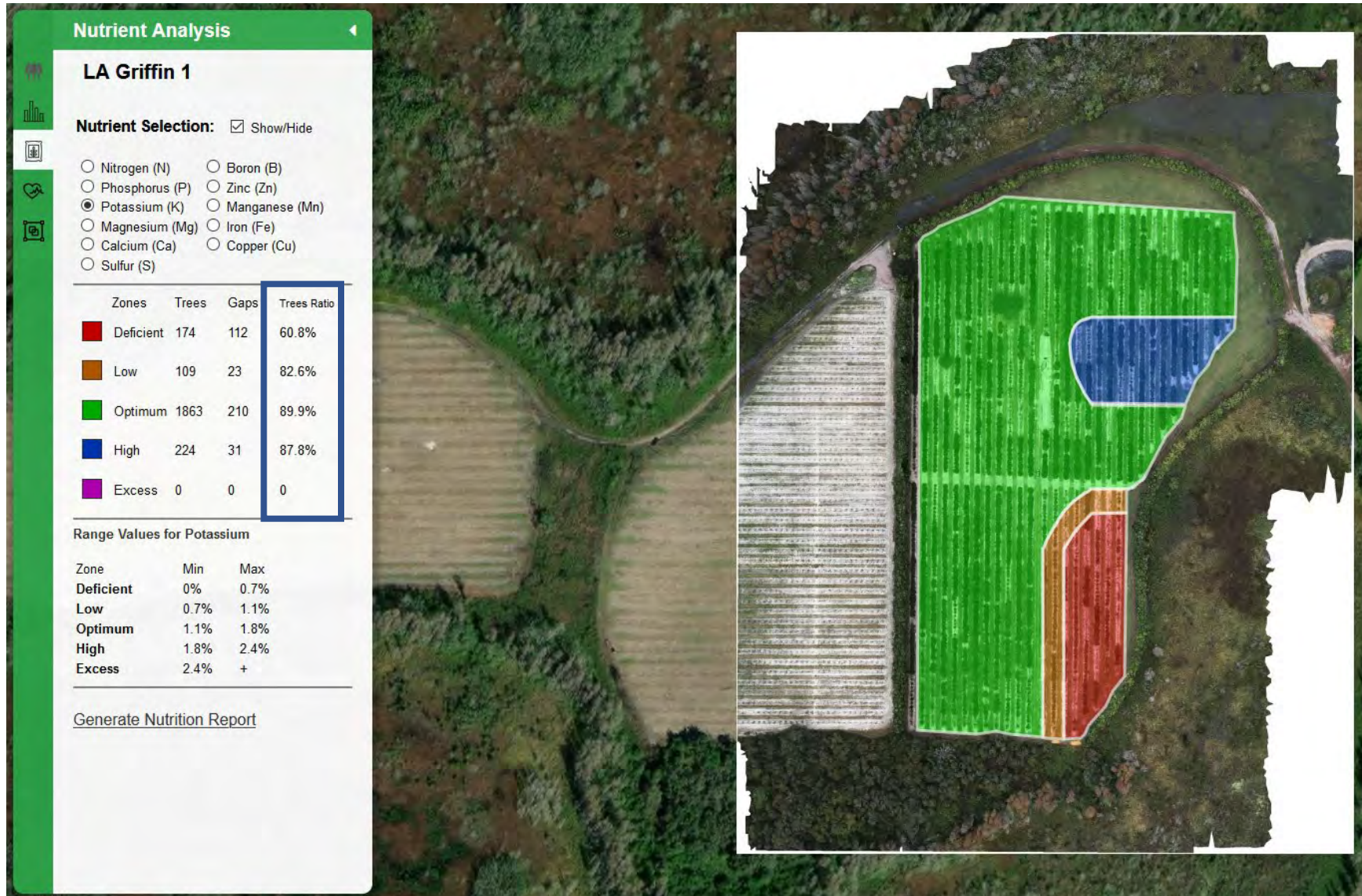
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Cloud-based application to process, analyze, and to visualize UAV collected data



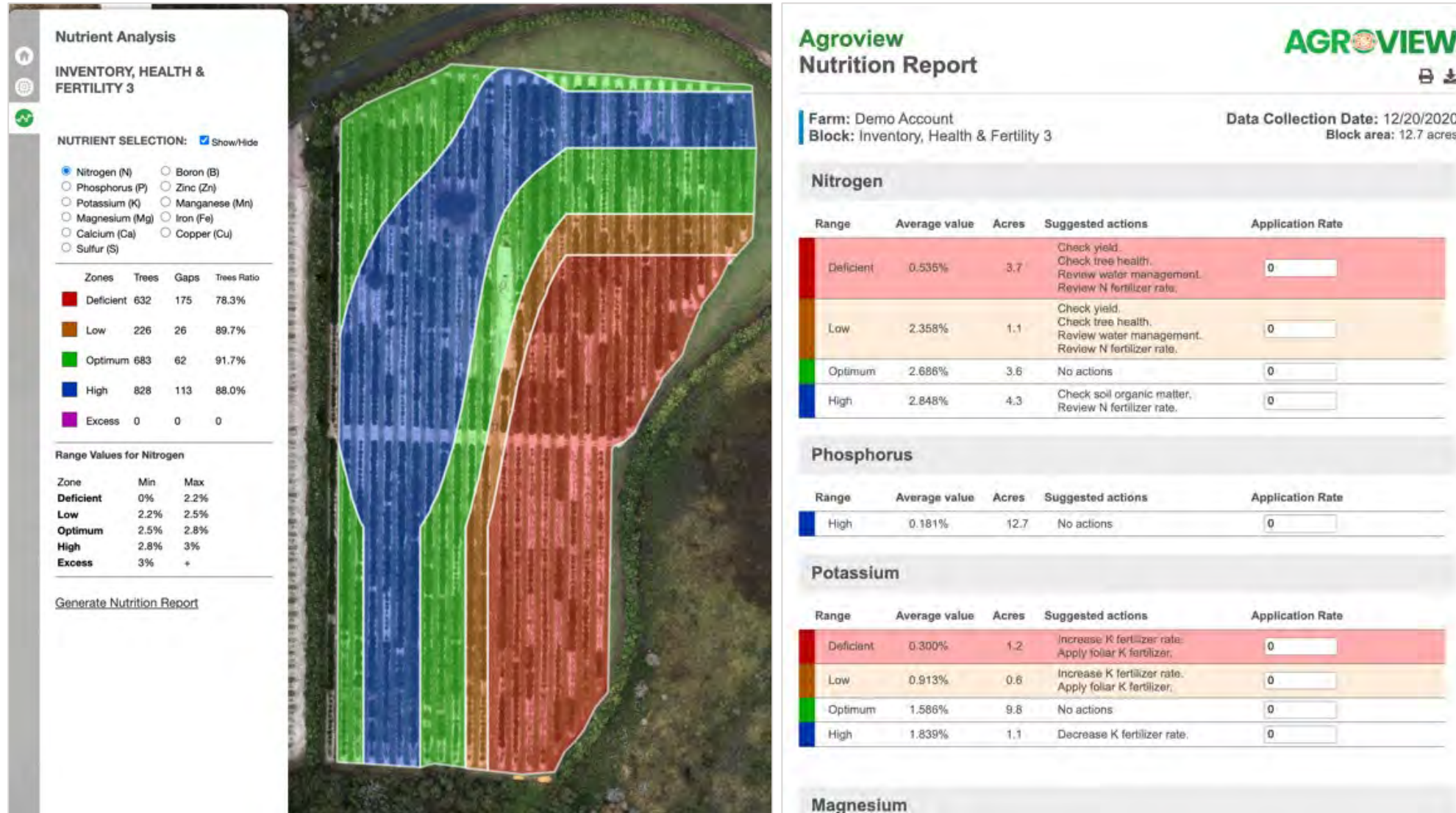
<https://twitter.com/i/status/1202671242647490560>

Best Management Practices Agroview - Nutrient Management



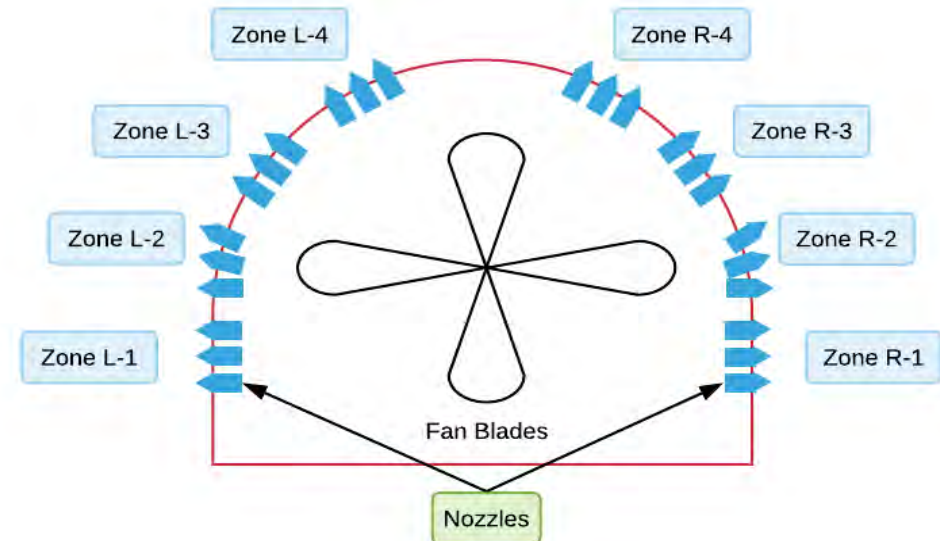
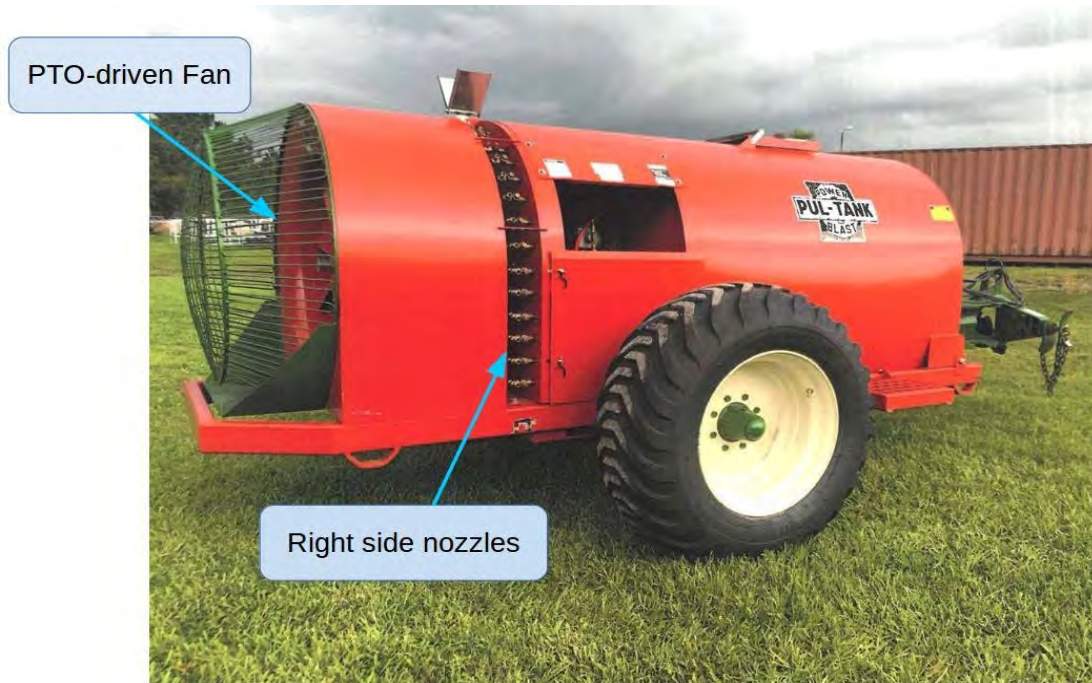
Costa L., Kunwar S., Ampatzidis Y., Albrecht U., 2021. Determining leaf nutrient concentrations in citrus trees using UAV imagery and machine learning. Precision Agriculture, <https://doi.org/10.1007/s11119-021-09864-1>.

Best Management Practices Agroview - Nutrient Management



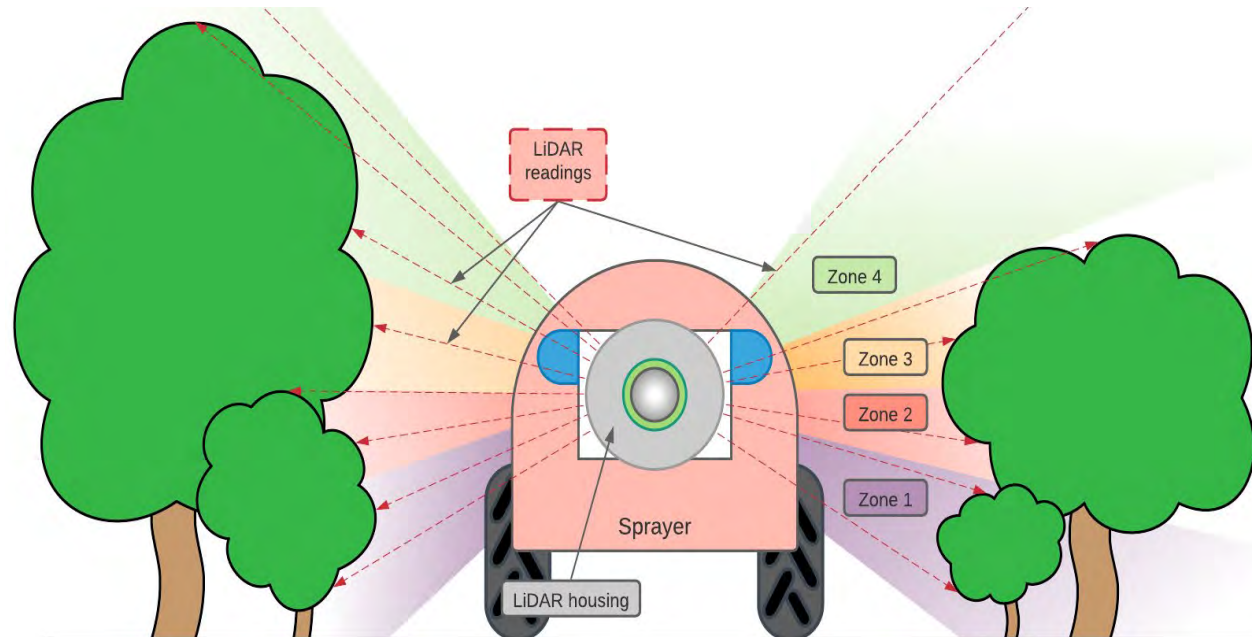
Costa L., Kunwar S., Ampatzidis Y., Albrecht U., 2021. Determining leaf nutrient concentrations in citrus trees using UAV imagery and machine learning. Precision Agriculture, <https://doi.org/10.1007/s11119-021-09864-1>.

Novel Smart Tree Crop Sprayer

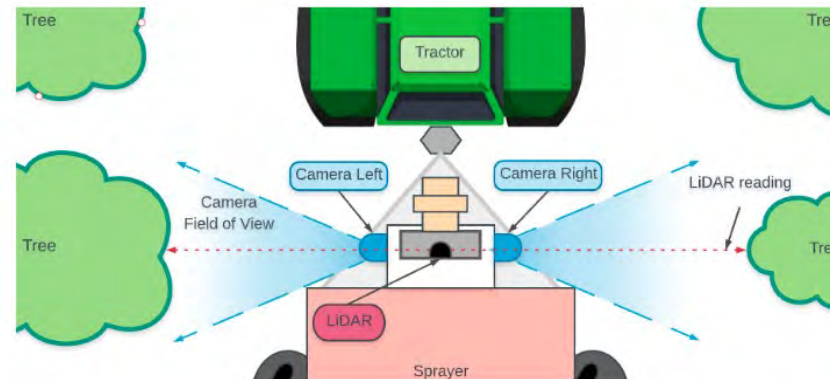


Smart and precision sprayer for tree crops. Florida Specialty Crop Block Grant Program - Farm Bill (SCBGP-FB). Duration: 1/1/2021 – 12/31/2022.

Novel Smart Tree Crop Sprayer



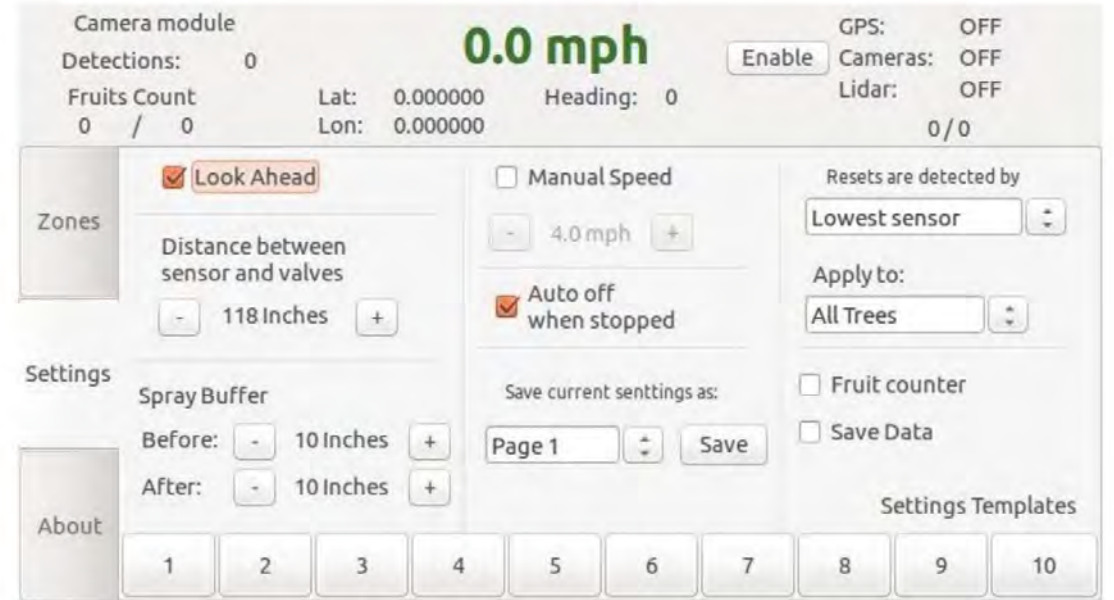
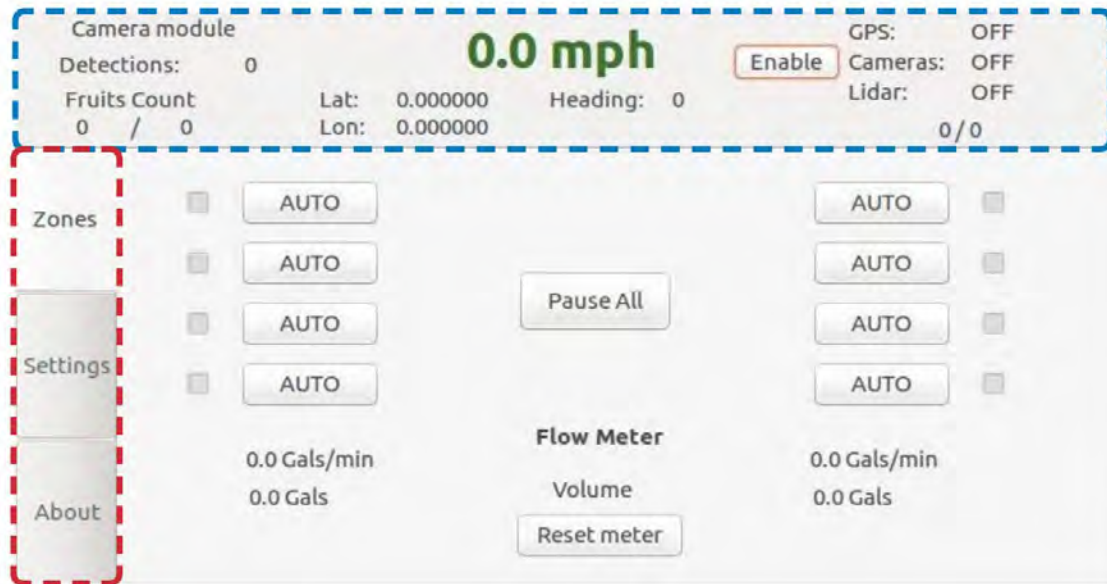
a)



b)

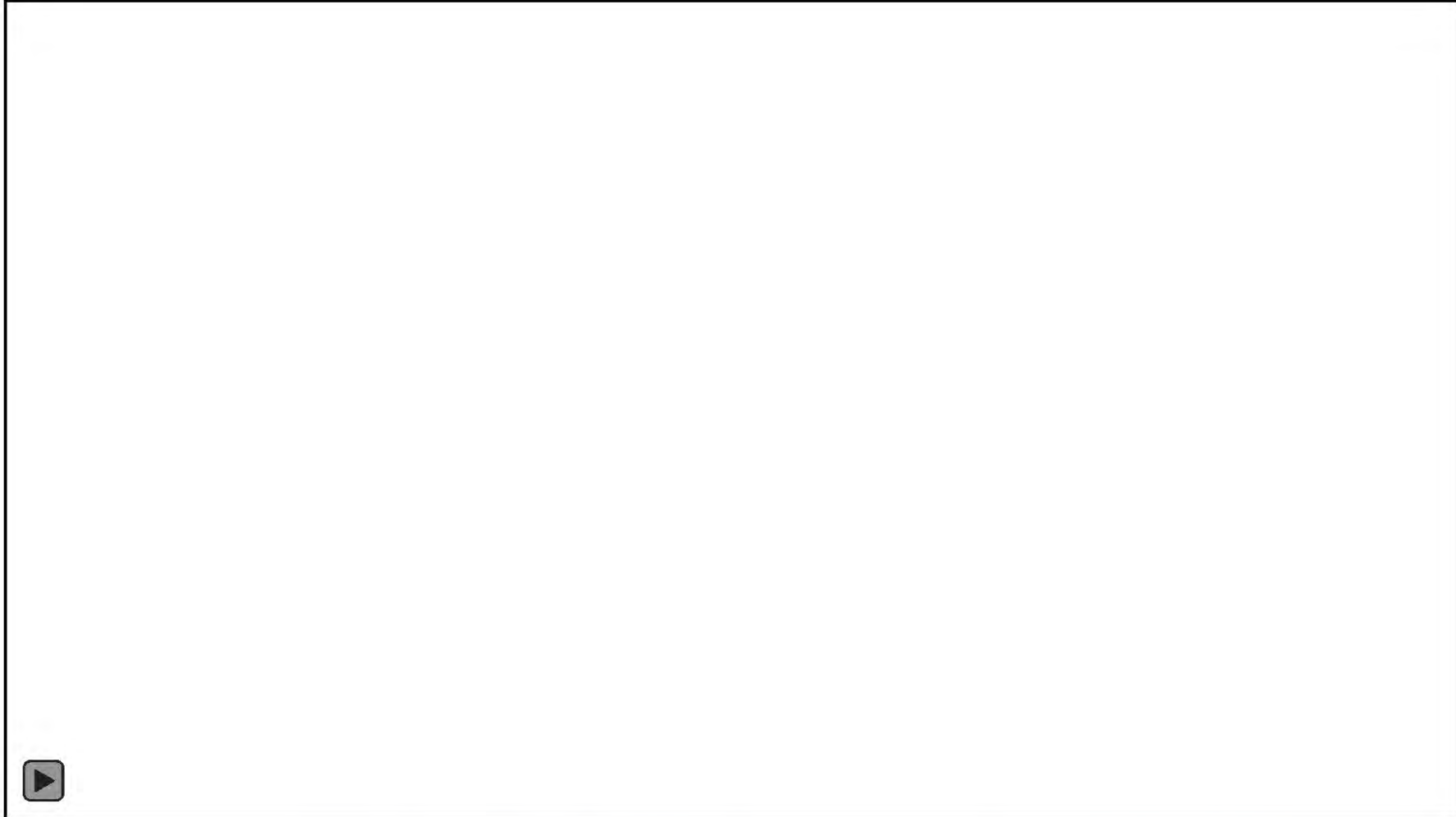
a) RGB camera installed on the sprayer, b) top view of the schematic of the positioning of cameras and LiDAR on the sprayer

Graphical User Interface



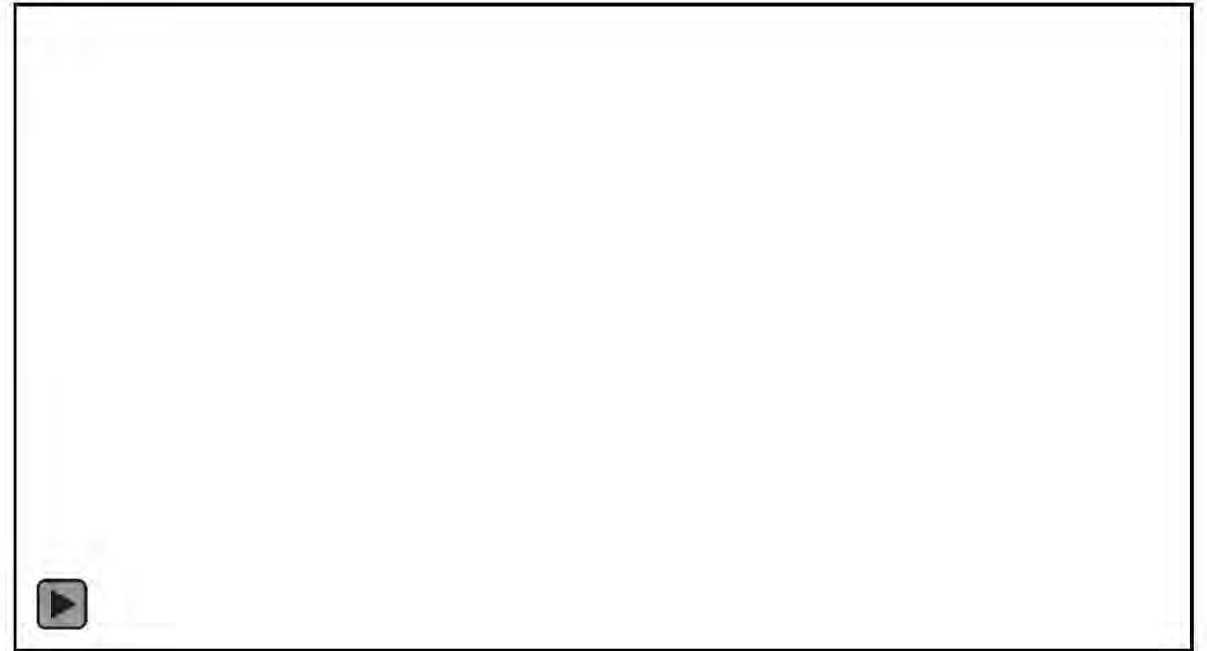
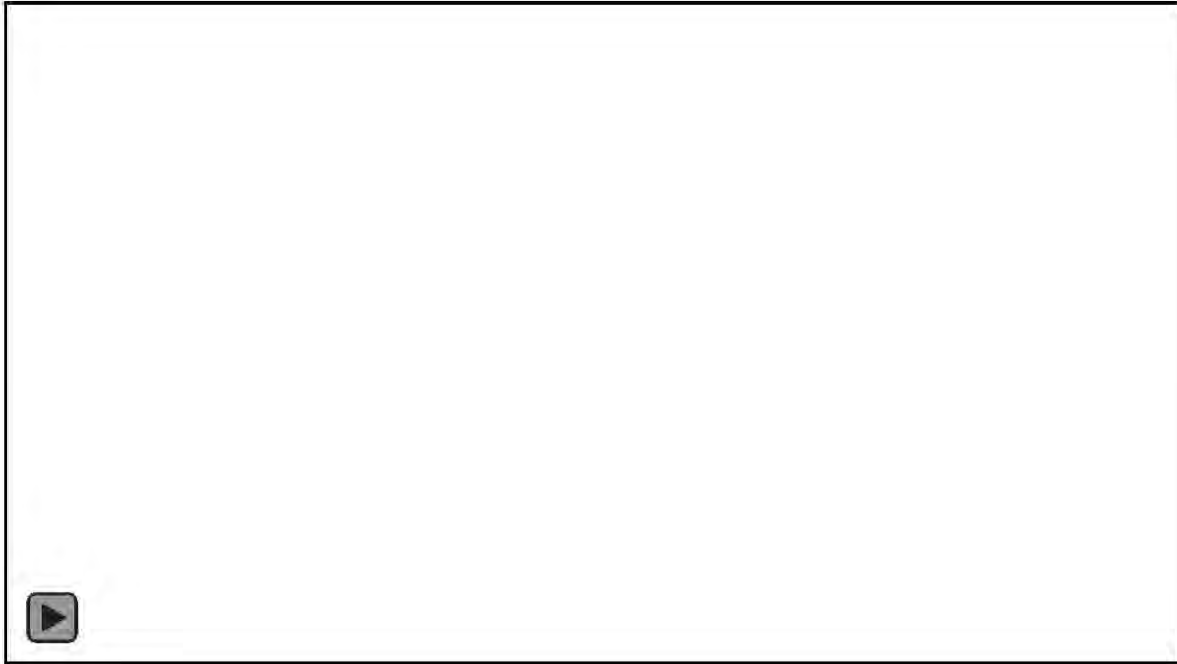
Patent

Smart Tree Sprayer using Artificial Intelligence (AI)



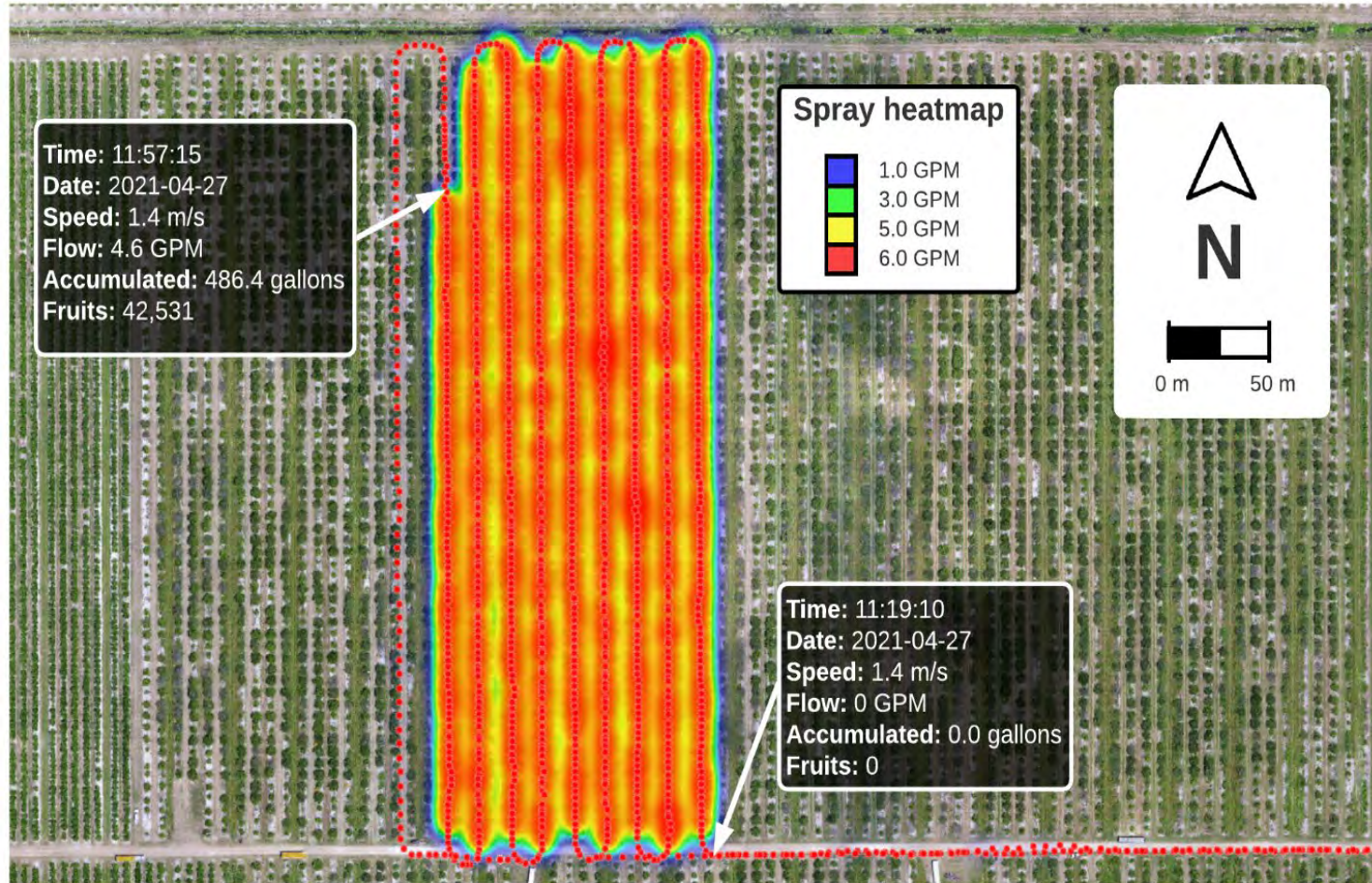
<https://youtu.be/SZvmALvoSUQ?list=TLGGlrt2a6JeEp0xODAxMjAyMg>

Smart Tree Sprayer using Artificial Intelligence (AI)

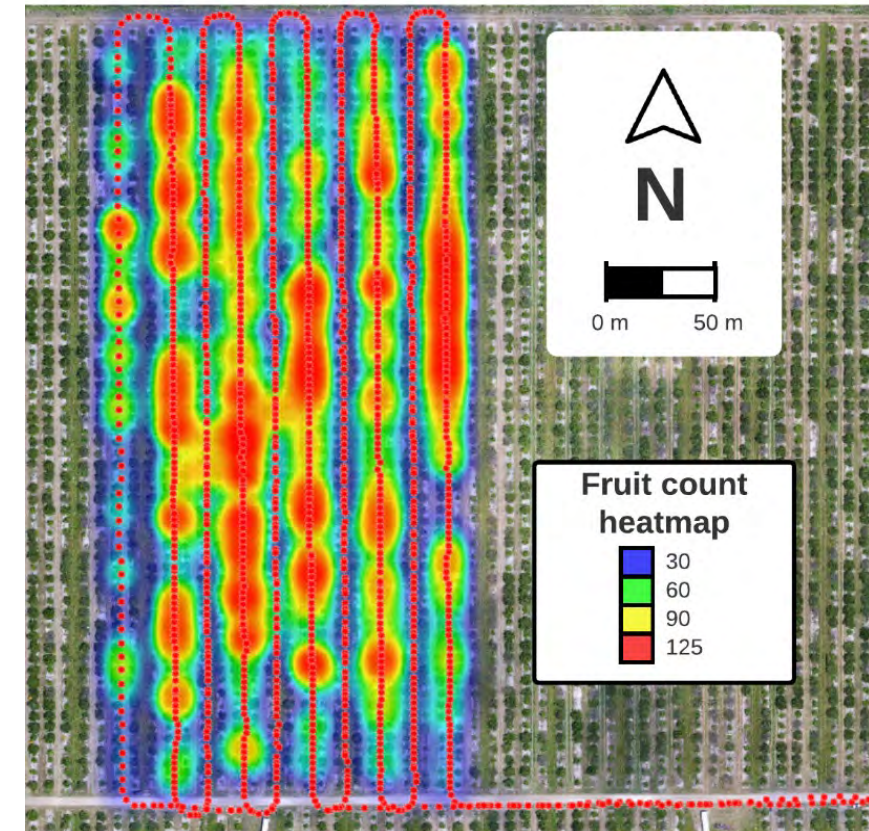


Smart Tree Sprayer using Artificial Intelligence (AI)

Spray path and spraying heat-map



Fruit detection and fruit heat-map



Thanks for your attention!

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