

OpenFruit collaborative system for the management of family fruit orchards

CHILE, ARGENTINA, COSTA RICA



Webstory



Technological solution

Family fruit-growing systems decide on irrigation and fertilisation without data of their own on how their orchards behave, against water deficits that reached 70 % in the 2019 summer season in La Araucanía and up to 50 % in Costa Rica. OpenFruit brings satellite monitoring of the orchard, farm climate records and agronomic history into one interface, making it possible to detect vigour variation within an orchard, anticipate problems through a predictive model and guide site-specific corrections. The Hub SmartFruit-ALC platform is the vehicle for adoption, connecting growers, advisors, AgTech entrepreneurs and public institutions.



Technological description

OpenFruit is an open-access collaborative system with a Web-GIS architecture and a mobile application, co-designed with fruit growers and advisors in Chile and Costa Rica. It integrates three layers per orchard: spectral indices and signatures from satellite imagery at defined phenological stages, meteorological and soil-climate data for the farm, and records of species, cultivar, agronomic management, yield and fruit quality, held in a geospatial database with polygons per orchard. On the research orchards, satellite data were cross-checked against drones with multispectral cameras and portable spectroradiometers to relate the indices to plant vigour and to nutritional and water status.



Impacts and results

The baseline covers 270 orchards, 130 in Chile (blueberry and raspberry) and 140 in Costa Rica (orange and papaya), and the system was implemented on 110 study farms, 70 in Chile and 40 in Costa Rica. A preliminary predictive model of adaptability to climate change was validated in eight orchards, and a Climate Change Vulnerability Index for orchards was built, which did not previously exist for southern Chile or Costa Rica. Comparing management records against the system's recommendations revealed irrigation doses at odds with what is advised and orchards showing nutrient toxicity or deficiency from inappropriate fertilisation.



+ 1

International Hub



+ 26

Collaborative Network



+ 600

trained women



+ 1

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+ 2

Territorial Tables



+ 4

Extension article



+ 2

Thesis



+ 270

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