

Space and the sustainable evolution of the agri-food sector

Beatrice Barresi
European Space Agency
Beatrice.Barresi@esa.int

How can space support the agri-food sector?

Sustainable food production

IoT networks (terrestrial and satellite) enable relaying sensor data, which can be integrated with satellite imagery and weather data for:

- **Precision agriculture** : improve irrigation and optimise fertiliser usage by precisely monitoring and detecting changes
- **Accurate yield prediction**: AI algorithm to predict yearly yield based on crop conditions
- **Land Restoration**: ensure that land is restored after harvest.
- **Pest Detection**: detect pests and reduce the need for harmful pesticides



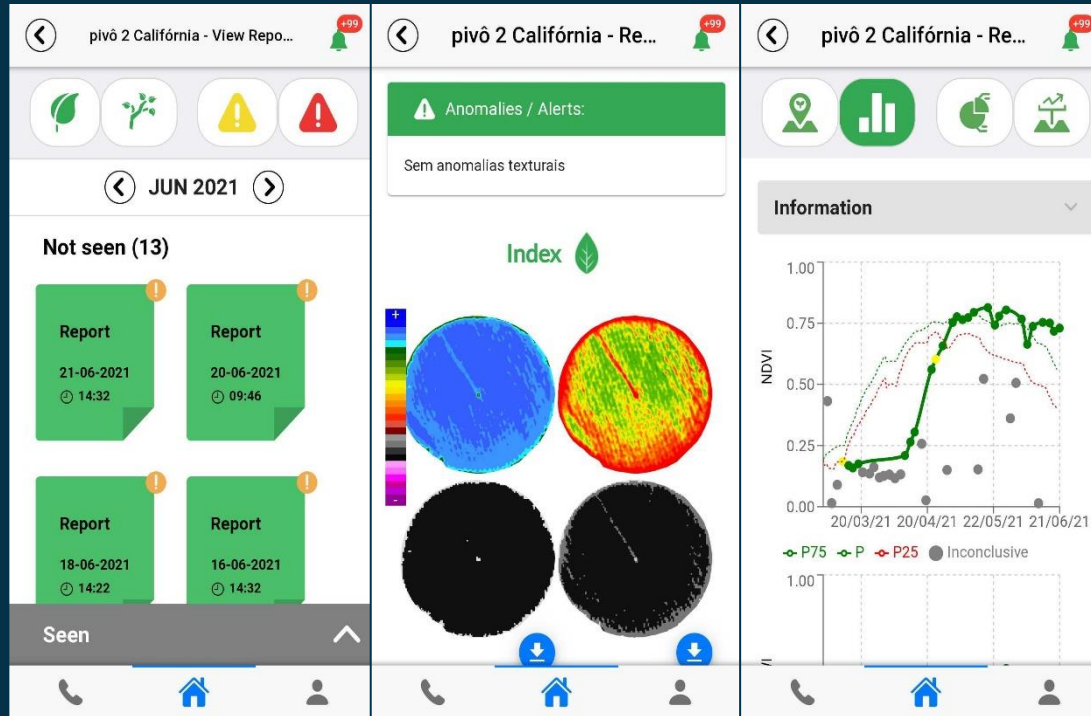
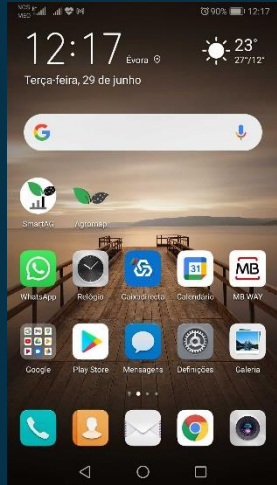
Robot and automatic machinery requiring connectivity and precise navigation support farmers in performing strenuous and repetitive tasks improving productivity while preserving the environment

How can space support the agri-food sector?

Management of the food supply chain

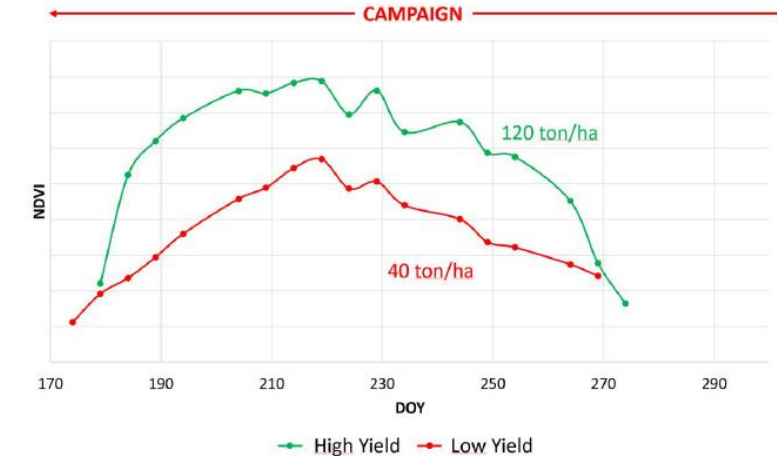
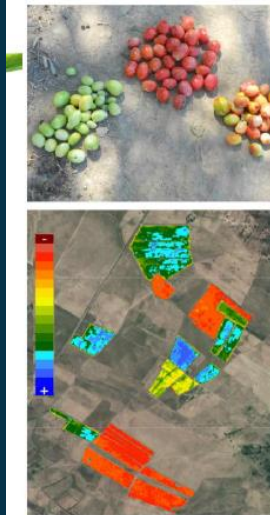
- **Minimizing waste:** Secure and ubiquitous connectivity supports the tracking and tracing of goods along the supply chain , as well as the monitoring of their conditions
- **Improved trading:** satellite imagery, time stamping and blockchain technologies can create peer-to-peer platforms for trading agricultural products





Service to identify homogeneous management zone to optimize the inputs, reduce nutrients, minimise pollution

AI Plants - Tomato



DryGro's method of growing an alternative to soybean crop to feed livestock uses 99% **less water** than soybean production.

It can also be grown on **dry, arid land** in the country of **consumption**.

The DryGro growing units involve a range of active and passive management systems to maintain ideal growing environments. Precise **weather and satellite Earth observation data** are used to monitor conditions at the growing units, predict and optimise the growth, and position future production sites.

DryGro is currently being rolled out in **Kenya** with ambitions to further expand throughout Europe and Southeast Asia.

