

# Establishing One of the World's Most Advanced Agriculture Information Systems

Case Study

## Challenge

Set up a comprehensive, constantly updated information system for all agricultural stakeholders of Turkey.

## Solution and Results

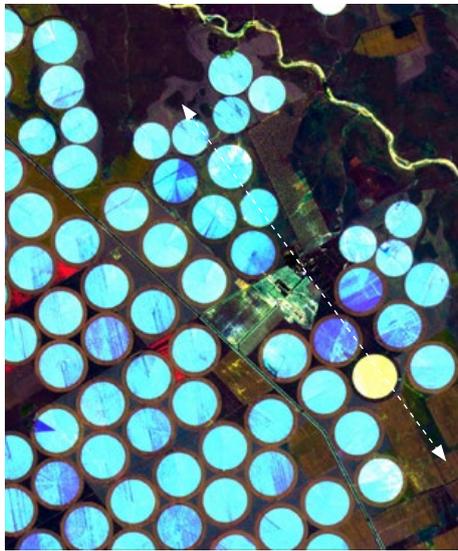
Frequent SPOT 6/7 1.5m image coverage, calibrated with ground information and processed on the cloud for easy, near-real-time dissemination amongst the agriculture community.

## Benefits

Optimisation of agricultural production with less cost, better resource management and minimised environmental impact.

“AIRBUS Products transformed the TARBIL Project from an ambitious dream into a reality; 800,000 km<sup>2</sup> of land covered as many times as necessary. For a large country with such a complex landscape and varied climate throughout its territory such as Turkey, it was a difficult challenge. Thanks to the AIRBUS constellation with its high spatial and temporal resolution, we can provide the TARBIL project with its much needed country-wide satellite imagery.”

Prof. Dr. Elif Sertel, Director of ITU-CSCRS



## Challenge

How do you optimise agriculture production and secure food for your people when you are the seventh agricultural yielder in the world? To solve this challenge, the Turkish Republic's Ministry of Food, Agriculture and Livestock (MoFAL) partnered with Istanbul Technical University (ITU) to launch an unprecedented agricultural monitoring programme. The ambition was big: set up a reference information system accessible for all agriculture stakeholders within the country. The objective: provide them with continuous yield forecasts at parcel scale and support them in optimising water, pesticides and fertiliser applications.

This one-of-a-kind programme, called TARBIL, required accurate, up-to-date and comprehensive information over all production areas within the growing season.

## Solution and Results

ITU installed an Airbus Direct Receiving Station (DRS) in 2002 – collecting a huge quantity of spatial imagery, delivered in near-real-time for the users – ideal for serving the needs of MoFAL and the TARBIL project.

Airbus' SPOT 6/7 satellites are perfectly suited to collect the required number of images within a regular turnaround period and their 1.5m resolution images meet the required level of detail, so vegetation variability can even be assessed even within the smallest fields.

The spatial data is sent in near-real-time to ministerial technical units for further processing. Images are immediately ingested into a cloud-based platform for conversion into solid vegetation maps (NDVI), calibrated with the ground information collected live by more than 15,000 sensors spread across the entire country. Object-based classification is also performed over this data. Parcel-level crop type maps and cultivated area statistics are delivered to MoFAL prior to harvesting. Value-added data, derived from satellite

imagery and processed by TARBIL experts is continuously uploaded to the cloud, with farmers able to access the information instantaneously. Timely and accurate decisions can then be made.

## Organisations Involved

**The mission of ITU-CSCRS** is to develop an advanced capability in remote sensing and satellite communications to meet the scientific needs and operational requirements of Turkey.

**The Ministry of Food, Agriculture and Livestock of Turkey** is responsible for ensuring the accessibility to reliable food quality and agricultural products, promoting the use of sustainable agricultural and ecological resources, and identifying and implementing policies to improve standards of living.



## Benefits

For the farmers:

- Free, tablet-based access to information for better fertiliser and pesticide allocation within the field.
- Automatic optimisation of water consumption.

- Customisable early warnings and alerts to detect problems in the field to enable a timely reaction. Continuous yield forecasts at field scale.

For the Ministry of Food, Agriculture and Livestock:

- Assess food security, anticipate shortages.
- Foster environmental protection.

- Democratise precision agriculture.
- Rationalise public spending thanks to smart pooling of resources amongst Turkish institutions.

For the agricultural trade and banking organisations:

- Harvest forecasting.
- Regional yield distribution.
- Risk assessment.

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