Empowering Utility Providers with Dynamic Data.

T E C H N I C A L   S N A P S H O T

Feature Product
OZIUS CROP STATUS INDICATOR (CSI)

Customer Challenge
Determine seasonal growth status of crops across a defined operational area to assist with network decision making in a dynamically changing environment.

Customer Segment
Utilities

Region & Area
Southern Australia

Computation
Ozius Biome ® Analytics Engine

Data & Inputs
NASA Modis Terra MODIS Web (nasa.gov) On Ground validation and verification data supplied by customer and Ozius. Ozius Biome® land cover products.

Applicability
Global – Crop lands

Presenting the challenge.

Critical infrastructure assets such as power, telecommunications, or transport span large areas and often need to co-exist with the agricultural industry. Utility infrastructure assets are not immune to the impacts and effects of environmental hazards such as fire and flood.

Our South Australian client came to Ozius because they wanted to maximise the continuity of their utility services and limit their downtimes during extreme weather events. In this instance, the client needed to work in harmony with farmers growing broad-acre grain crops.

According to the Grains Research and Development Corporation grain follows a lifecycle pattern with three distinct phases:

Slow expansion phase

The crop has germinated, and the green area of the crop expands slowly.

Rapid expansion phase

The crops green area expands rapidly and uses higher levels of nitrogen.

Senescence phase

The green area declines as leaves senesce from the bottom up. Harvesting represents the end of the phase for the crop.

Canopy expansion in relation to growth

GS13	GS24	GS30	GS39	GS59	GS71	GS80	Harvest

Slow expansion phase	Rapid expansion phase	Senescence phase
Green area of crop expands slowly (low N use)	Green area of crop expands to maximum (high N use)	Green area declines as leaves senesce from base
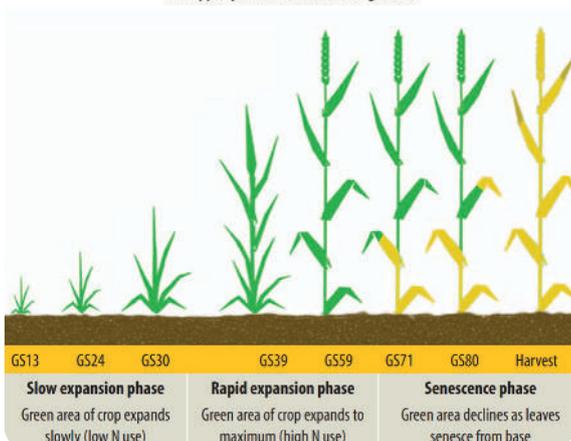
During the senescence phase, the crop has reached its peak potential and begins to dry out.

Once the crop reaches its optimal dryness, farmers will harvest the crop.

As the crop dries, it can present a higher fire risk.

Traditionally, farmers monitor the progress of the crop by walking through the fields and examining the plants, and utility providers would have very little information regarding at what stage the crop is.

Harness chaos. Change the future.

Ozius demonstrated a synthesised Ozius Crop Status Indicator to track the growth, drying and harvesting phases of the broad-acre grain.

This was done using data inputs from NASA Modis Terra MODIS web, on ground validation and verification data, and Ozius Biome land cover products.

Our Solution.

We were quickly able to identify local hotspots of similar crop-behaviour within the same observation period including:

- Regions of high biomass and long curing phases
- Areas likely harvested
- Locations that were potentially planted, but failed/low biomass crops

Using satellite + analytics Ozius were able to:

- Track crop cycle through the season and different stages of growth.
- Identify the presence of planted crops
- Track the cumulative relative biomass (plant volume) through the season
- Identify the relative peak biomass and drying (curing) phases
- Identify the timing of harvest.
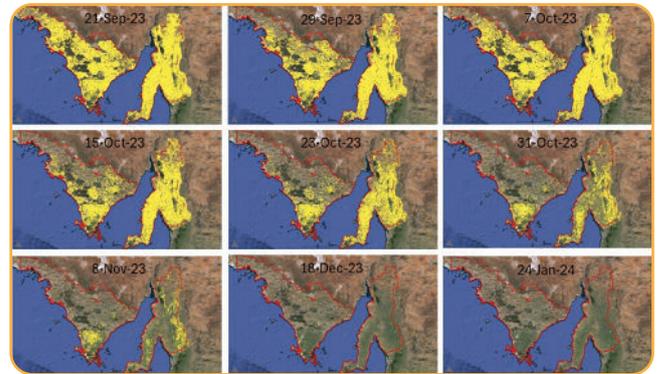
Wins for the client.

With the use of the Ozius Crop Status Indicator, our client was able to make more precise and localised decisions regarding service continuity without having to rely on information from external sources.

Having accurate information in real-time enabled the client to:

- Limit and localise impacts from hazards that would otherwise be more widespread and be detrimental over a longer period.

- Plan their maintenance programs to optimise areas with potential impact thus limiting downtime and ensuring safety of maintenance crews.

- Improve asset management during extreme weather conditions.

Summary.

This project clearly demonstrates how having continual access to real-time data can dramatically improve decision making abilities and help to create solutions that ultimately save time, money, and potentially even lives.

Whilst this case was a South Australian utilities company, the Ozius Crop Status Indicator can also be applied to agricultural industries and any other business that has to co-exist with crop growers anywhere in the world.