



PLANETARY VARIABLES

Crop Biomass

CROP BIOMASS OF AGRICULTURAL FIELDS • Valle Hermoso, Mexico • July 1, 2021

OVERVIEW

Modern agriculture can be bolstered with consistent and reliable intelligence from satellites to optimize crop health and maximize yields. Clouds, however, pose a significant barrier to capturing insights because they obscure the imagery produced by space-borne cameras.

Introducing Planet's Crop Biomass, a daily, cloud-free data product that delivers accurate estimates of vegetation density across all weather conditions. Designed for companies serving the agricultural industry, Crop Biomass provides valuable insights into crop health, helping to improve decision-making and drive profitability.



Cloud-Free

By leveraging radar data, Crop Biomass delivers crop health data without being obscured by the weather



Daily Data

Receive updated field-health information on a reliable, daily cadence with an archive that starts in 2019



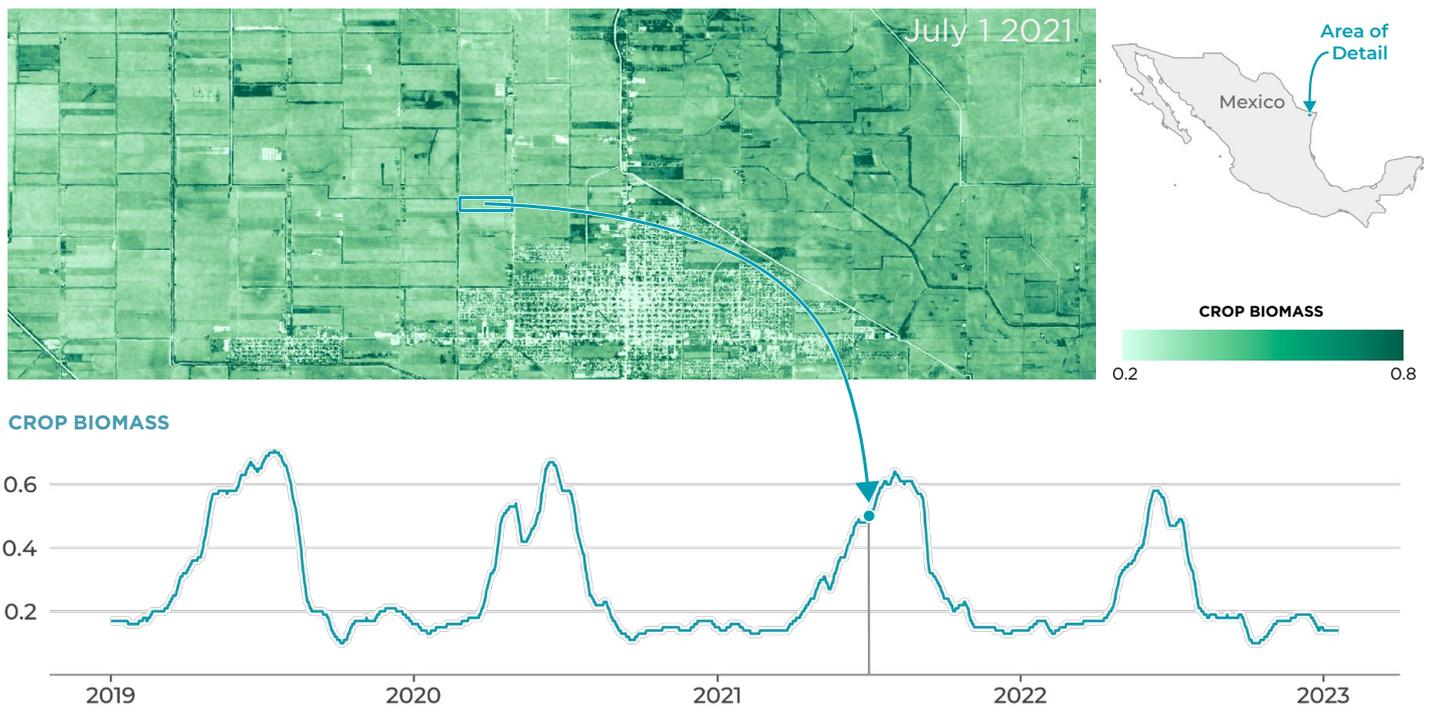
Analysis-Ready

Capture crop conditions without the need for time consuming data cleanup and processing

HOW IT WORKS

Crop Biomass is based on data from both synthetic aperture radar (SAR) and optical satellites. By harnessing microwaves, the data feed can “see through” cloud cover, and combining the microwave signal with available optical coverage means that Crop Biomass can provide insights about agricultural fields regardless of the weather.

Each pixel has a value from 0 to 1 which represents an estimation of the vegetation biomass present in that area, with lower values for bare soil and increasing values for higher canopy densities. Planet has done the challenging work of deriving a meaningful signal from these two signals, and the data is orthorectified, cloud-free, and can be used directly as an input in models or be displayed on a map.



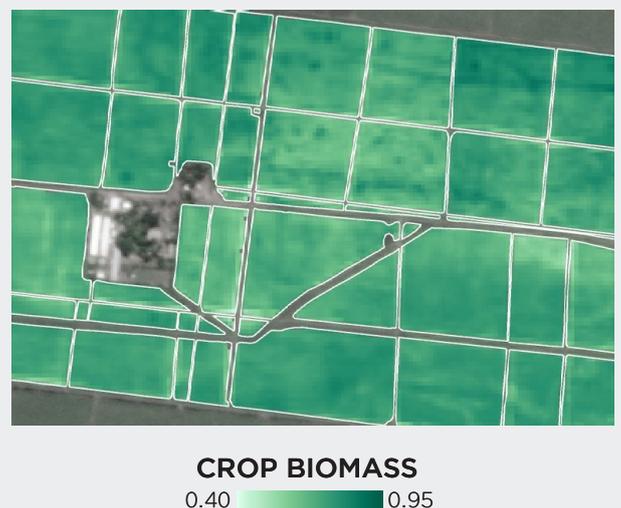
Crop Biomass data near Valle Hermoso, Mexico. The image above represents crop health in one agricultural field from July 1, 2021. Below, the average Crop Biomass reading from that field is plotted over four years, showing how each season's crops performed throughout the growing season from emergence to harvest.

USE CASES FOR AGRICULTURE

Precision Ag

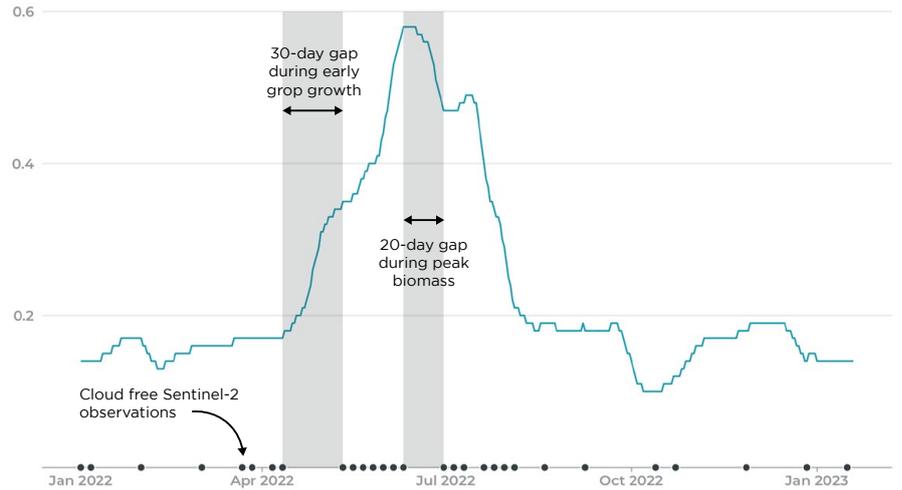
Crop Biomass data from the current season and from the archive is used to generate prescription maps for seeds and fertilizers. While archive data can be used to generate pre-planting and at-planting prescriptions relative to seed populations, fertilizers and amendments, in-season data can serve as the basis for fungicide and side and top-dress prescriptions.

At right, Crop Biomass over sugarcane fields near Sipacate, Guatemala from August 25, 2022. By leveraging both radar and optical data, the information-rich raster images from Crop Biomass can highlight differences in vegetation health between and within individual fields.



Crop Monitoring

Crop Biomass is the perfect tool for monitoring crop growth and health. With daily, cloud-free data, Crop Biomass provides insights into crop biomass. Low values are typically associated with factors like water stress, nutrient deficiencies, pests, and diseases, which helps farmers identify underperforming areas and take corrective action.



Crop Biomass, represented by the blue line, is delivered daily, while Sentinel-2 cloud-free images, represented by the black dots at the bottom of the graph, show much less frequent observations over a field in northeast Mexico. The dotted boxes represent relatively long periods of time where updated observations would be impossible to attain from optical data alone

SPECIFICATIONS

Crop Biomass

Temporal Resolution	Daily; delivered every day at 6:00 AM local time
Data Availability	January 2019 - present
Pixel Size	10 meters
Satellites Used	Sentinel-1, Sentinel-2
File Format	GeoTIFF, CSV (time series)
Spatial Coverage	Global, subject to Sentinel 1-A availability

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