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# GROENMONITOR: MEASURING AND TRACKING THE DEVELOPMENT OF GREEN SPACES

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The GreenMonitor (GroenMonitor) is a satellite monitoring system that generates a “green index” in the form of a number between 0 and 1. This number indicates how much biomass is present in a given area. Tracking the development of biomass provides an overall picture of the progression of a growing season, as well as the influence of weather, pests, plant diseases and human activity on the land area.

The website for the GreenMonitor does not provide data analysis or specific recommendations to users. Rather, it gives users data (green indices) that can be used in a multitude of ways to inform actions and responses. While this lack of a specific data product may be confusing for some, it also allows for flexible implementation that could be combined with other technologies to act as a digital game changer. It is easy to see how this product could be useful for farmers to better infer when to plant which crops and where, for insurance companies to calculate the damage done by a disease or pest, and for conservationists to monitor development of green spaces in a nature area.

## Application scenario

Satellite monitoring of vegetation.

## Digital technologies

Website to access satellite data.

## Socio-economic impact

- Economic: information driving response to drought, floods, pests and diseases.
- Environmental: measurements of biomass and nature development during a season.
- Social: information to support coordinated actions.

More info: <http://www.groenmonitor.nl/>



## Purpose of the tool

The GreenMonitor is intended to share information with farmers and ecologists about biomass developments. This 'green index' calculated by GreenMonitor for a given land parcel is freely available via the website, where there is a video explanation of the tool (in Dutch). This information does not include specific recommendations for different land parcels. Rather, it informs users as they make any number of decisions. Applications are many. For example, the tool could allow users to work with their neighbours to coordinate a response to pest infestations like processionary caterpillars, to diversify crops and increase yields, or to set up partnerships between ecologists and farmers that benefit conservation areas without threatening crops.

## Description of the tool

The GreenMonitor uses information from satellites which take pictures of the Earth's surface on cloudless days. The satellites have a 6-metre resolution. These satellite images are cross-referenced with a database of the uses of each parcel of land (e.g. grasslands, forest land, crops, and urban areas). Each parcel of land is then given a number between 0 and 1 called a green index. Just like temperature can be measured with degrees Celsius, the biomass of a land parcel can be measured with the 'green index' (*groenindex*), otherwise known as a *Normalised Difference Vegetation Index* (NDVI), which is the ratio between the reflections of red and near-infrared light. The index is then used to compare different parcels of land, or to compare the same parcel of land from one month or year to the next. The index can show when crops were harvested, the impact of drought and speed of recovery, or the progression of diseases killing off biomass. This information is valuable to farmers and ecologists alike. Though the direct implications of the tool itself are small, combining this information with other sources could have a multitude of applications. The website already gives the example of the data being combined with the movements of fauna to track damage done by some pests. The availability and flexibility of the data make it a potential digital game changer.



Photo credits: GroenMonitor

## Areas of socio-economic impacts

<b>Social</b>	Access to information for informed coordinated action.
<b>Economic</b>	Calculation of damage trends caused by climate change-related events.
<b>Environmental</b>	Conservationists track changes in land use and movement of fauna.