

LARGE-SCALE EXPLOITATION OF SATELLITE DATA IN SUPPORT OF INTERNATIONAL DEVELOPMENT

→ CROP YIELD PROGNOSIS

Near real time yield prognosis statistical information is used as tool that helps to optimize production by providing quantified information of the in-season crop development. Information on expected crop yields during a growing season is of great importance to the public and private sector.

In the public sector there is a need to know the status of crop production at the regional scale in order to assess the food security and to update their crop statistical systems. Within the private sector, different players in the agricultural value chain are interested in yield prognosis. For farmers yield prognosis is of interest to estimate income. Food producers can streamline their logistical planning based on yield estimates and commodity traders need yield information as the basis for future buy-and-sell contracts. Yield prognosis models are available for the major crop types.

Most existing satellite based yield forecasting models are based on vegetation indices such as NDVI coupled with multi-year yield statistics. These models use an established correlation between NDVI-profiles and actual yield figures of the past years, sometimes decades. However, they have their limitations in areas where statistical datasets of historical yield are not available or reliable.

For areas without a historical yield database, an approach based on the biomass production is more suitable. To get from biomass production to yield forecast two main conversions are necessary. First the conversion from biomass to yield, and second the conversion from a current measurement to a future forecast. The expected biomass production until date of harvest is estimated using known crop growth patterns and weather data. Crop specific yield models combine the expected crop growth pattern, based on years of research, with the expected temperature for the period until harvest, based on long year averages for the specific region.

Relationships between EO observed biomass production and crop yield are area specific and need to be established using "in situ" yield measurements.

DESCRIPTION

Forecast yields of major crops

USE

- › Optimize production in-season
- › Anticipate to expected yield in post-processing agricultural chain
- › Improve decision making related to the agricultural market

INPUT PRODUCTS

- › NDVI
- › Biomass production
- › Weather
- › Crop yield models

SPATIAL RESOLUTION AND COVERAGE

Local/national (10-30m) and regional (250m) scale

BENEFITS

Rapidly supply/derive reliable information on the crop prognosis and food security of the developing countries

DELIVERY FORMAT

Depending on user needs, e.g.:

- › Vector and raster formats
- › Through a web portal
- › Statistics in tables and/or graphs

FREQUENCY

Depending on user needs, most products can be updated regularly (daily at regional level, every 10 days at local/national scale)

