FAO Global Information and Early Warning System on Food and Agriculture (GIEWS)

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Established after the food crises of early 1970s, the GIEWS regularly monitors and reports on food supply and demand across the world. It is a leading source of information on food production and food security at national, regional and global levels.

Through a variety of assessments and reports, the GIEWS alerts national and international decision makers on impending food crises, aiming to guide timely interventions to protect lives and livelihoods.
Which are the main variables monitored by GIEWS?

- weather conditions
- input availability and prices
- pest and disease outbreaks
- conflicts
- trade flows, including food aid
- food stocks
- international and domestic food prices
- policies
- humanitarian interventions
- macro-economic conditions
Which are the **information sources & tools** used by GIEWS?

- Reviewing and analysing **data and reports**, from official and unofficial sources
- Relying on a **network** of key informants at various levels
- Maintaining updated database of **domestic and international prices** for several food commodities in several markets
- Performing specific **rapid food security assessments** in countries facing emerging food crises
- Maintaining updated **cereal balance sheets** at country level, identifying likely food gaps
- Analysing **remote sensing data** and using **Earth observation tools** for crop monitoring: the FAO-developed **Agriculture Stress Index, ASI**

**Expert judgement and consensus building**
What is the Agriculture Stress Index (ASI)?

The ASI is a quick-look indicator that uses Earth Observations for the early identification of cropland areas with a high likelihood to be affected by drought.
How does the **Agriculture Stress Index (ASI)** work?

ASI uses 1-km resolution

Building block is the Vegetation Health Index (VHI), a composite index combining:

- the Vegetation Condition Index (VCI) and
- the Temperature Condition Index (TCI)

Integration of VHI values in time and space, assessing the intensity and duration of dry periods

- use of crop calendars
- use of coefficients to take into account crop sensitivity to dryness at different phenological phases
- use of crop masks

Thresholds:

- $VHI < 25\% = $ extreme drought
- $25\% < VHI < 35\% = $ severe drought
- $35\% < VHI < 38\% = $ moderate drought

![Map showing Agricultural Stress Index (ASI) in Somalia](image.jpg)

**Agricultural Stress Index (ASI)**

- % of cropland area affected by severe drought per GAUL 2 region
- from: start of SEASON 1
- to: dekad 1 May 2019

**METOP-AVHRR**

**WGS84, Geographic Lat/Lon**

*Disclaimer: The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, area or of its authorities, or concerning the delimitation of its frontiers and boundaries.*
From global to country level Agricultural Stress Index

Country-level ASI allows countries to generate better results by fine tuning global parameters using detailed land use maps, sowing dates, length of cropping cycles and crop-specific water-stress sensitivity coefficients.

Which purposes has country-level ASI served so far?

- providing early warnings for agricultural droughts
- trigger the implementation of mitigation interventions and early actions
- guiding investments in drought-prone areas
- threshold for payment of indexed crop insurance premiums
- forecasting yields in inaccessible areas (conflicts)
What next for ASI?

Development of a probabilistic drought forecast

Possibility to zoom in some hotspot areas using high-resolution images through technical cooperation and synergies with other institutions

Use of improved crop masks and crop calendars

Use of Artificial Intelligence and Machine Learning
Thank you!

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