



The African Postharvest Losses Information System

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Mycotoxin Agro-climatic Risk Warnings

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Mycotoxins risk warning



- > Models explain over 90% of mycotoxins development based on weather and other indicators, **but only around 50% in real field conditions**
- > Data scarcity about mycotoxin occurrence main limitation for model calibration and validation at the field level in an African context
- > Quantitative relationship between pre-harvest weather anomalies and mycotoxin occurrence at later stages practically impossible to measure
- > questions:
 - Is it possible to do agro-climatic risk modelling for mycotoxins at the level of admin regions based on weather anomalies?
 - How useful are such risk maps knowing that they can not really be validated statistically?



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Field Crops Research

journal homepage: www.elsevier.com/locate/fcr

An improved simulation model to predict pre-harvest aflatoxin risk in maize

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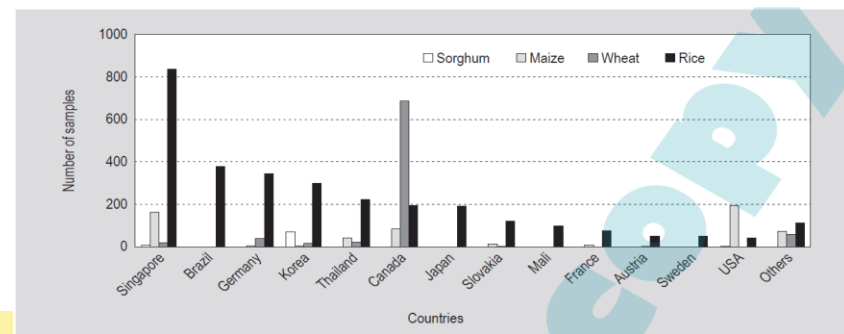
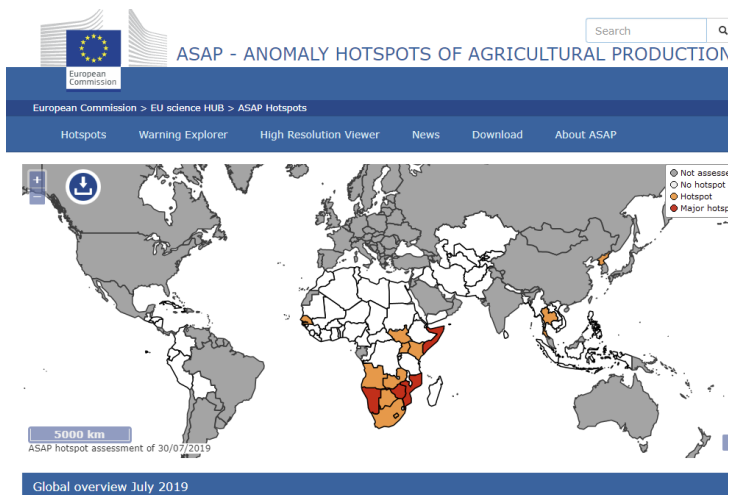


Figure 2. Number of samples submitted to the GEMS/Food database on aflatoxin in maize, rice, sorghum and wheat by country.



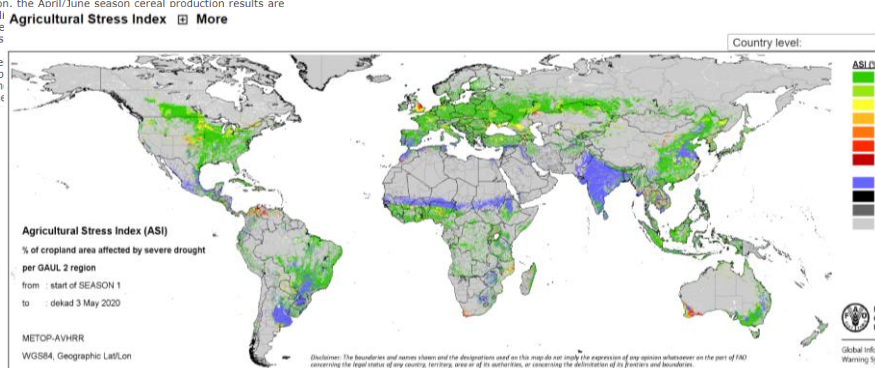
Use of existing agric. early warning systems

- > Weather anomalies information such as drought and excess of rainfall is available thanks to existing global agricultural crop monitoring and early warnings systems

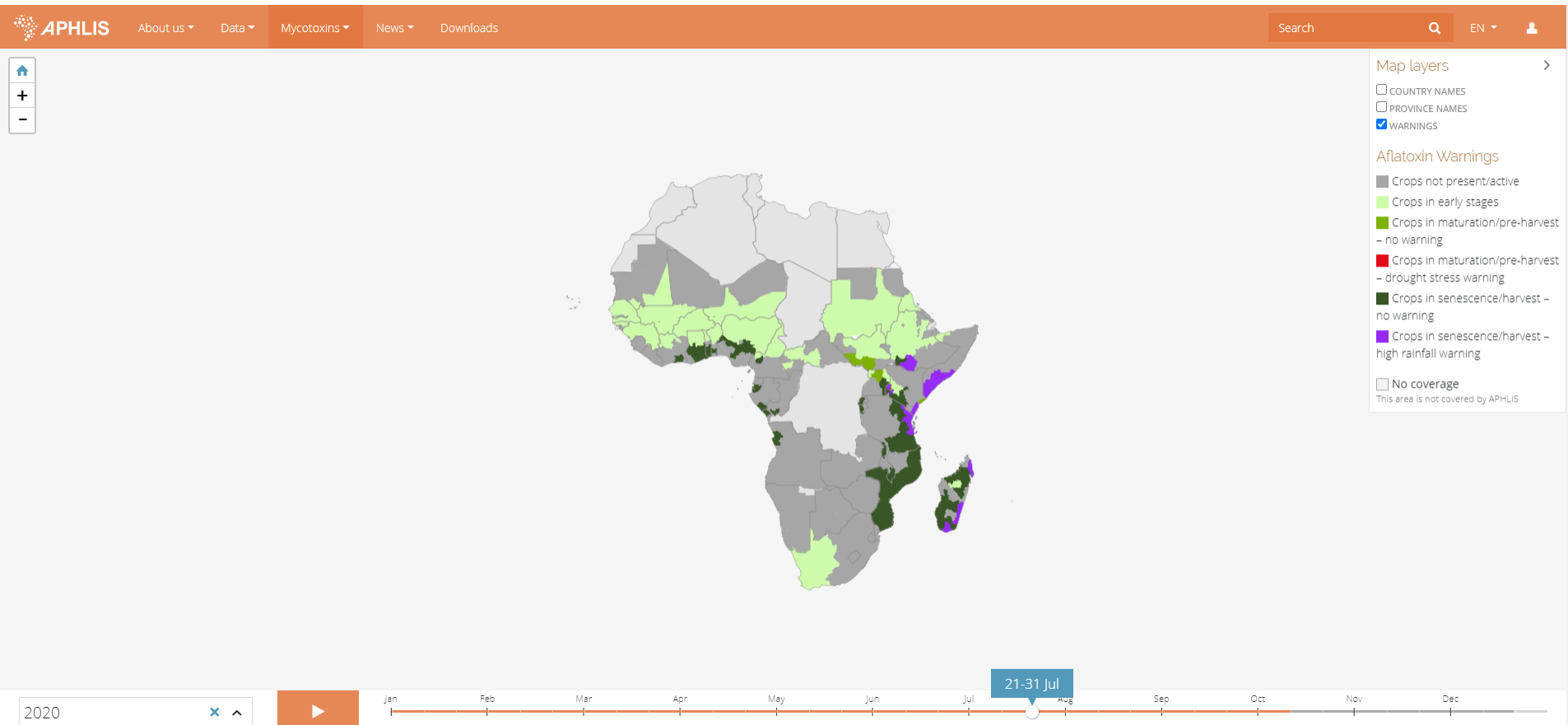


- > Drought stress during the grain filling phase of maize is one pheno stage where crops are particularly sensitive.
- > High moisture levels around harvest favour mycotoxin development

East Africa: In the northern part of the region including Sudan, central and northern Ethiopia and Eritrea, the crop season is generally progressing well and with adequate water supply. In the southern part of the region, the April/June season cereal production results are mixed, due to a delayed onset of the rainy season. Most severely affected is Somalia the 5 years average (FSNAU). In Kenya, the May/June rainfall improvements were central highlands and in the high-potential western crop areas, but production was and maize prices have been increasing markedly since April. Uganda has received any case negatively affected by the early season drought and is estimated 12% be water availability in June/July has favored temporary rangeland recovery in most p rainy season, many of those areas are at risk of early vegetation depletion (e.g. n Somalia, south/eastern Ethiopia). In South Sudan rainfall has also improved since



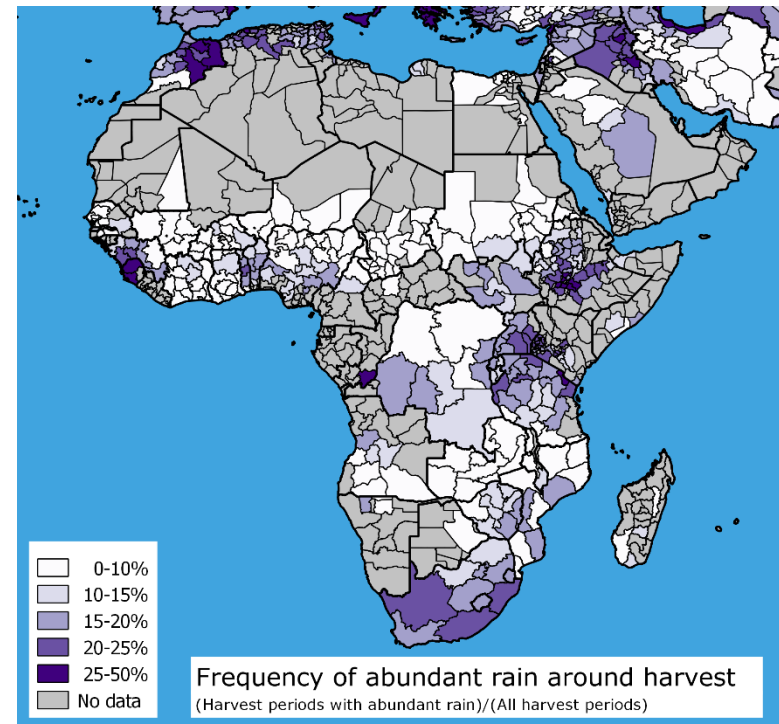
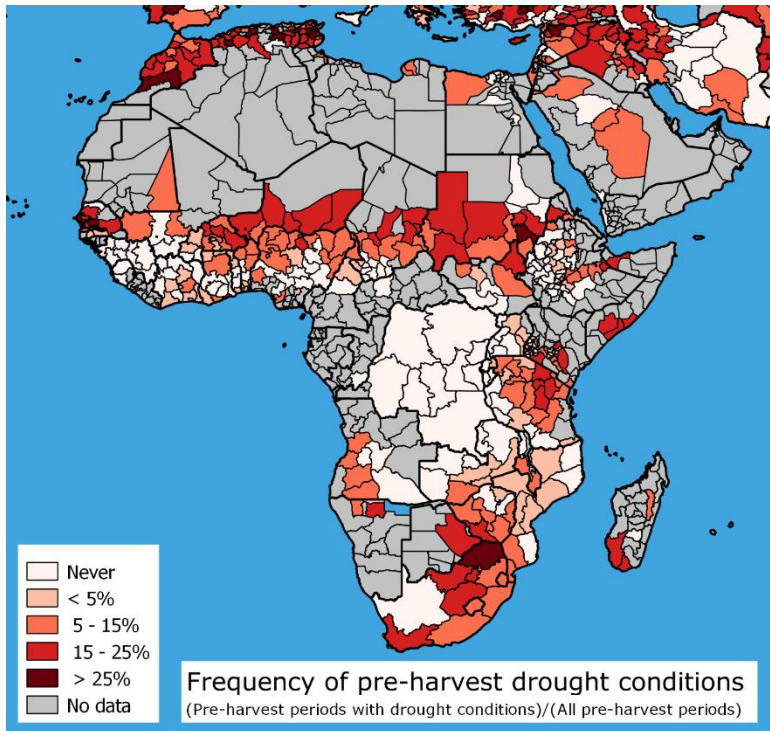
Mycotoxin risk maps (near real-time)



Mycotoxin risk maps (historical)



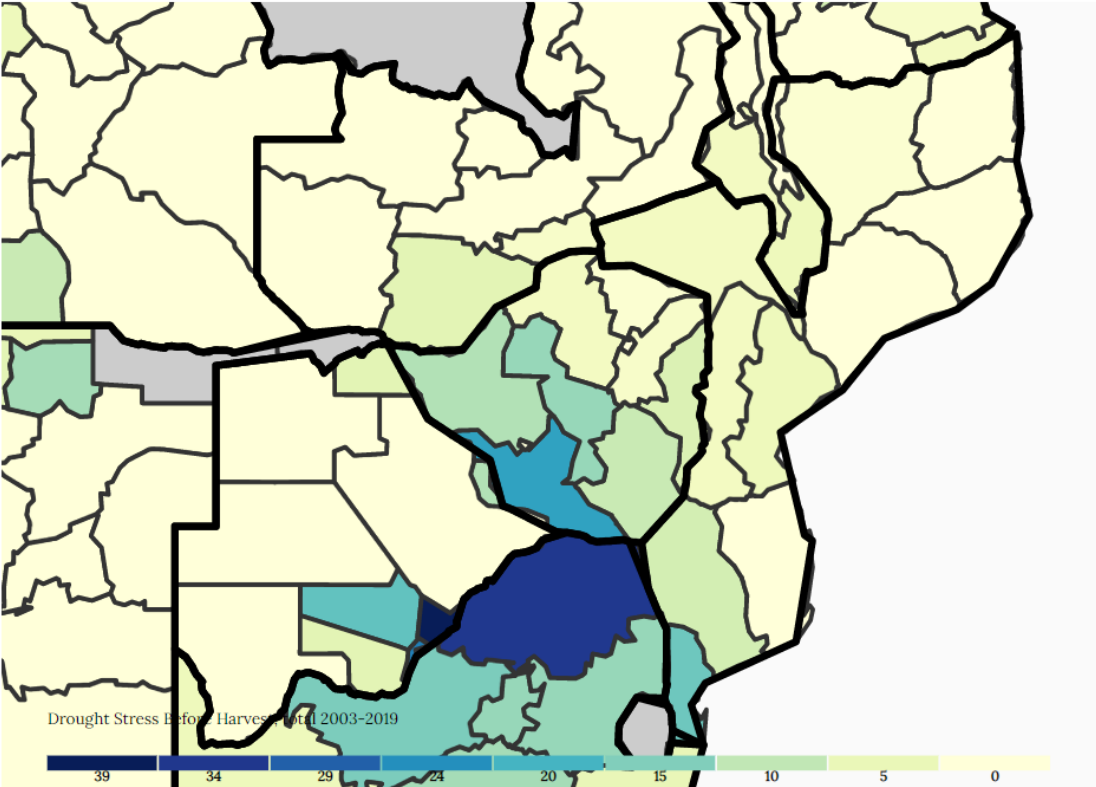
- > Historical frequency warning maps have also been produced both for pre-harvest warnings linked to drought and warnings linked to rain at harvest time



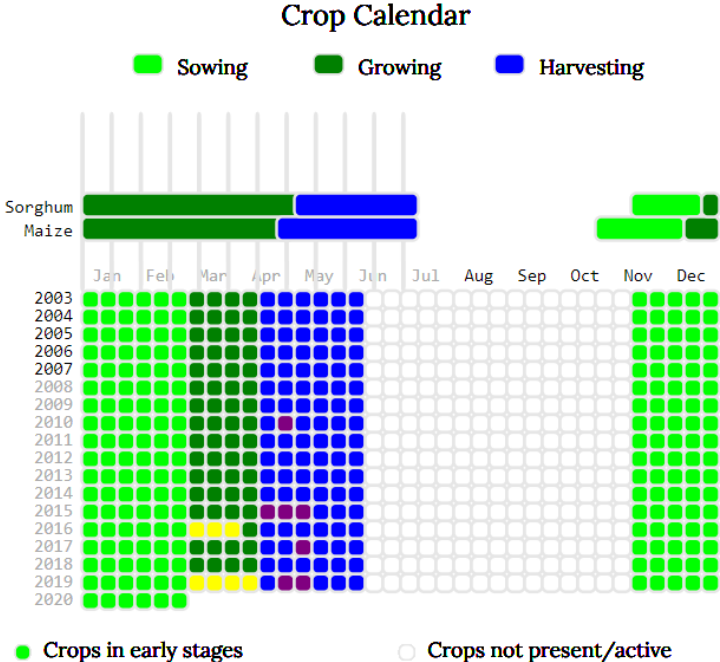


Aflatoxin Risk Prediction an ASAP data visualization

Factor: Drought Stress Before Harvest, total 2003-2019
Region: Africa
Level: provinces



Southern, Zambia



Next Steps



- > Share the mycotoxin early warning maps with the expert community
- > Understand usefulness vs. needs by different users communities
- > plan improvements and collaboration with other teams based on this meeting
- > For example: use a combination of remote sensing and innovative data collection for the improvement of information on:
 - exact time of the harvest
 - rainfall at harvest

For access to the mycotoxin agroclimatic risk maps (from 2002 to now) write to:

info@aphlis.net or felix.rembold@ec.europa.eu