



Foresight model & tool factsheet

ADAM

Model Name:	Agri-food System Data Analysis Modeling framework
Version:	1
Model type:	Hybrid model
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Date:	December 2022
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Short description of the model

At the behest of CIMMYT's management committee a set of calculation procedures was developed to mix and match divergent data sets for research prioritization purposes. For transparency, reproducibility and re-useability of the procedures and other procedures like these ones, the agri-food data analysis modeling framework (ADAM) was conceived. ADAM is based on the design principle of the separation of data, model switches and calculation rules. ADAM provides insight into historic data sets by recombining information and providing results at a vast variety of possible aggregation levels in a transparent way.

The modeling framework can, in principle, operate at a variety of aggregation levels. Currently the focus is on country level as the lowest level of aggregation, because that is the level at which data tends to be available in such a way that it can be made into a comprehensive and comparable format.

Input data

A variety of input data is used. This ranges from FAO production data, price information, and food balance sheets, to world bank indicators and other data sources such as the USDA food nutrient content tables.

Foresight model results of the same type of data could potentially also be used to calculate post foresight model metrics.

Output metrics

The output metrics are derived data from calculations with the input data and include: gross production values in both absolute terms as well as shares, poverty gap values and the average apparent nutrient intake at national levels.



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The ADAM framework has been used to generate infographics and comparisons between higher and lower income countries within specific regions for various output metrics.

Software used

The modeling framework is based on GAMS, the General Algebraic Modeling System¹. It makes use of the capabilities of GTREE for enhanced model transparency.² For visualization and statistical analysis R is used. For text manipulation AWK is used as it is shipped with GAMS.

Accessibility:

User documentation

User documentation can be found through the GitHub site:

<https://github.com/GideonKruise/PrioritizationC2EH>

Code

The model code can be found on the GitHub site:

<https://github.com/GideonKruise/PrioritizationC2EH>

Openness

The code of ADAM is freely accessible

Application examples

ADAM has been used to support setting priorities for demand driven breeding that service complex and dynamic agri-food systems, requires a strong evidence base (<https://osf.io/preprints/socarxiv/ybgsm>).

ADAM has also been used in the projected benefits study related to the One CGIAR research portfolio (<https://cgspace.cgiar.org/handle/10568/120302>).

Acknowledgement

ADAM was originally developed with funding from the CGIAR research program (CRP) on Maize and the CRP on Wheat. In both cases as part of the cluster of activities 1.1 on foresight. As of 2022, the maintenance, further development, documentation and enhanced accessibility of ADAM is financially supported by the One CGIAR initiative on Foresight and Metrics for the Transformation of Food, Land and Water Systems (FMI). CGIAR is a global research partnership for a food-secure future, dedicated to transforming food, land, and water systems in a climate crisis. We would like to thank all funders who supported this research through their contributions to the CGIAR Trust Fund:

<https://www.cgiar.org/funders/>.

¹ GAMS <https://www.gams.com/>

² GTREE: <https://www.medictcare.nl/gamstools/>