


Explore farming systems vulnerability and adaptation in a changing world



REGIONAL SUMMARY




How will climate change, socioeconomic development, and adaptations shape the future of regional agriculture?

Start here for main messages and impacts discussions.

READ MORE

The homepage and regional summary pages provide text and illustrations for users with general knowledge of agricultural adaptation.

SPATIAL DASHBOARD




Explore impacts, vulnerability and adaptation of farming systems with maps and infographics of key findings.

Compare major results across regions and systems.

VISUALIZE RESULTS

Maps and infographics help interested users compare climate impacts and vulnerability across scenarios, regions, and farm systems.

DATA EXPLORER



Access, filter, and create custom figures from regional integrated assessment outputs.

Provides more detailed exploration for expert users.

EXPLORE DATA

Expert users can explore underlying data in the Data Exploration Tool and methodology pages, including model and scenario-based uncertainty as well as differential impacts on diverse communities

A new visualization tool shows how future agricultural systems will be shaped by the interacting forces of climate change, socio-economic development, and adaptation. Designed in close collaboration between stakeholders and scientists within the Agricultural Model Intercomparison and Improvement Project (AgMIP), the AgMIP Impacts Explorer showcases key findings and messages from new multi-disciplinary integrated assessments in regions across Sub-Saharan Africa and South Asia. Users of the AgMIP Impacts Explorer can navigate findings depending on interest and expertise:

- 1) A first level providing summary of findings designed for wide audiences;
- 2) A second level for audiences with specific regional or technical interests, provides an interactive spatial dashboard presenting regional findings in the context of comprehensive maps to facilitate comparison and broader messages;
- 3) A data explorer that allows expert users to analyze model outputs across regions, crops, models, climate scenarios, adaptations, and socioeconomic developmental pathways.

The AgMIP Impacts Explorer provides a wide variety of stakeholders with a quantitative basis for planning and investment decisions. It also provides material for communications, education, and research on current and future agricultural systems in light of evolving climate, technology, and socio-economic factors.

Visit:

<http://agmip-ie.alterra.wur.nl/>

AgMIP Impacts Explorer Walkthrough

Welcome to the Impacts Explorer!

Whether you are a stakeholder or a scientist, the AgMIP Impacts Explorer (IE) offers the opportunity to view compiled research findings across sub-Saharan Africa and South Asia in a variety of formats. The following pages provide an overview guide for how to navigate the multi-level platform with information at three levels of expertise to expediently find information relevant for you.

AgMIP Methodology

On the main menu bar, select the “Methodology” drop-down

- Before exploring the findings and data, get acquainted with AgMIP and its research objectives. On the methodology page, an overview of AgMIP’s broader objectives is presented before models, scenarios, and engagement is discussed in more detail.

ABOUT AGMIP

MODELS

SCENARIOS AND ADAPTATIONS

STAKEHOLDER ENGAGEMENT

What is AgMIP?

The Agricultural Model intercomparison and Improvement Project (AgMIP) is an international collaborative effort to improve agricultural modelling and to understand climate impacts on the agricultural sector at global, national, and regional scales. More information on AgMIP findings, products, and activities is available at www.agmip.org. This AgMIP Impacts Explorer was created with support from the UK Department for International Development.

Why AgMIP?

Agricultural risks are growing. Decision-makers need probabilistic risk analysis to identify and prioritize effective adaptation and mitigation strategies.

Consistency is key. AgMIP is establishing research standards so future studies no longer use different assumptions across regions and models.

Ongoing solutions. AgMIP is developing a rigorous process to evaluate agricultural models, which results in continuous model improvement.

AgMIP Research Regions

On the main menu bar, select the “Regions” drop-down

- Select any location, i.e. Punjab, Pakistan (right), for a summary of the findings from the regional research teams.
- Using the blue icons on the bottom left of the page, navigate to different sections (overview, farming system, etc) of the page.
- The page provides clear explanations of future projections and possible adaptations through text, info-graphics, and figures.
- The “visualize results” tab in the top right will bring you to the Spatial Dashboard, the next level of the Impacts Explorer.

SOUTH PUNJAB, PAKISTAN

Adapting cotton-wheat farming systems

VISUALIZE RESULTS



CURRENT FARMING SYSTEM

Small, Medium and Large Farms
Cotton-Wheat Cropping System
Irrigated
Good soil fertility



CLIMATE 2050s

Increase in temperature of at least 2.5 °C up to 3.6 °C

Uncertain projected changes in rainfall – median increases but potential for up to 52% decline in cotton growing season and 42% in wheat growing season



IMPACTS

Mean cotton yield losses of 47% under higher temperatures
Wheat yields stable or decline by 2% to 4.5%



VULNERABILITY 2050s

Poverty of farmers could increase by up to 17% under climate change with high emissions
Per capita income is reduced by 14% to 35%



ADAPTATIONS

Adaptations of drought-resistant and heat-tolerant seed varieties, management improvements, water conservation, efficient irrigation, agricultural insurance, and farm mechanization reduces poverty by 24% to 65%



Acknowledgements

The AgMIP Impacts Explorer was constructed with guidance and support from the Department for International Development UKaid. Construction of the tool was led by partners at Wageningen University, NL, with scientific outputs and coordination led by Columbia University’s Center for Climate System Research, USA, in conjunction with the US Department of Agriculture, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and more than 30 additional partners.

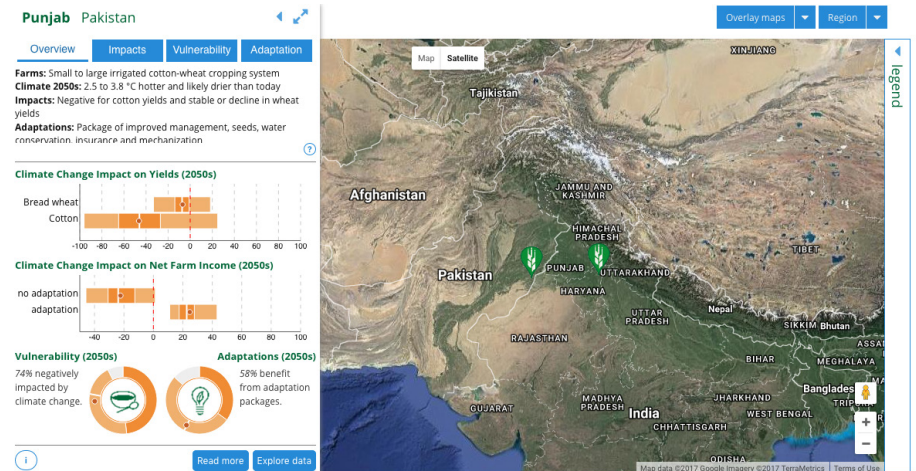


AgMIP Spatial Dashboard

On the main menu bar, select the "Dashboard" drop-down

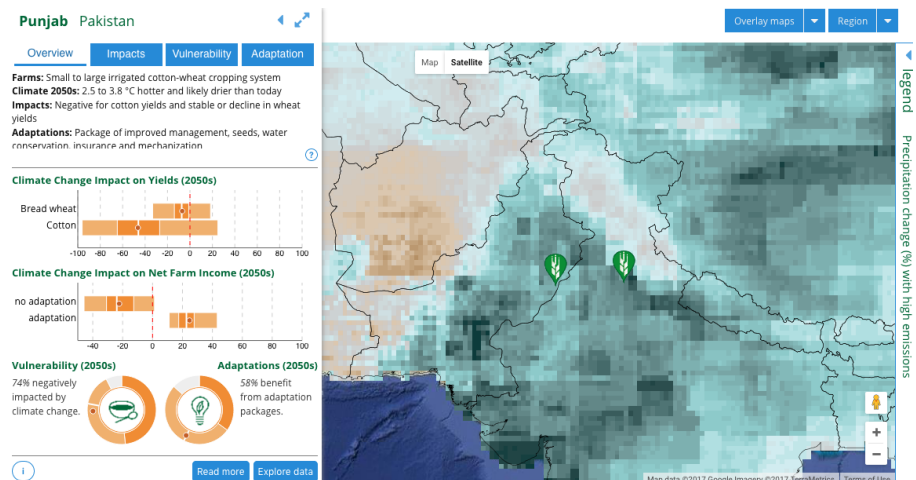
- Select any location from the map. Locations are identified by the green icons bearing AgMIP logos.
- Once selecting a location, for example Punjab, Pakistan (right), the map should zoom into the region and a window will appear on the left-hand side. The window will include four tabs:
 - › Overview information
 - › Projected impacts from climate change
 - › Vulnerability under future scenarios
 - › Adaptation methods for reducing vulnerability

Spatial Dashboard for Punjab, Pakistan



- Click the arrows on the upper right corner of the data page to see the full infographics
- Hover mouse over graphics for additional information
- Click on the question mark to define the green and grey road
- Notice they lead to very different outcomes
- For more Level 1 information on the RAPs, select "read more"
- For more Level 3 information on the RAPs, select "explore data"
- Close the left-hand window
- Click "overlay maps" and choose from any of the dropdowns
- End with "remove" map

Overlay Maps for Punjab, Pakistan

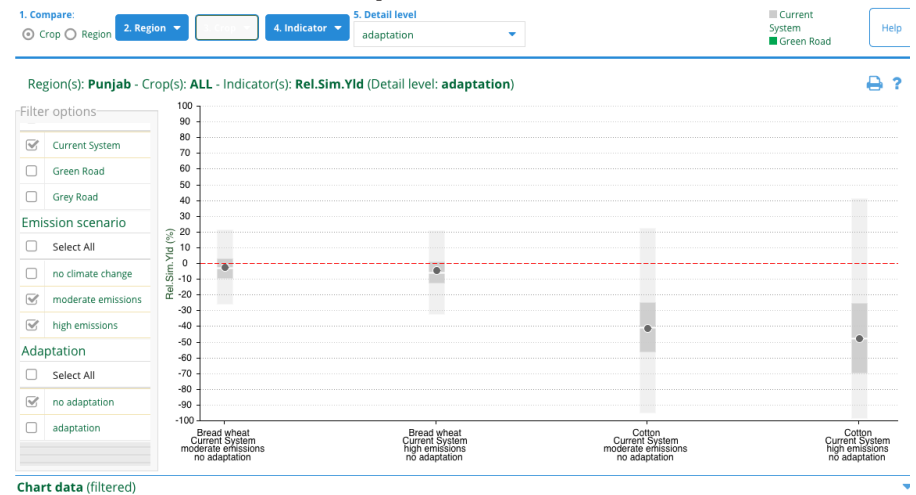


AgMIP Data Exploration

Return to the main menu and select “Data Exploration” (Level 3)

- There are filter options on the top and the left-hand side
 - › De-select all filter options on the left-hand side
 - › Choose any region
- To examine current system vulnerability, select:
 - › Current System; high emissions; no adaptation
- To compare different emissions futures, also add:
 - › Moderate emissions
- To examine Future System vulnerability also:
 - › Select only cotton under #3 (top bar) and both green and gray roads (left side)

Current system vulnerability in Punjab, Pakistan



- To examine current adaptation potential:
 - › De-select all previous filters on the left-hand side
 - › Select current system; no climate change; adaptation
- To focus on socioeconomic information:
 - › Change indicators to “net returns and poverty”
 - › Select Green/grey roads; moderate/high emissions; no adaptation
- To compare across regions:
 - › Change #1 to “region” (top bar)
 - › De-select current system
- Data and charts can be downloaded and saved as a .png file and/or exported by selecting the arrow at the bottom of the page

Socioeconomic Forecast in Punjab, Pakistan

