

RISK CHARACTERISATION AND ADAPTATION TECHNOLOGY FOR RICE IN SOUTH ASIA



Borlaug Institute for South Asia (BISA)
International Maize and Wheat Improvement Center (CIMMYT)
CG Block B, NASC, DPS Marg, Pusa, New Delhi-110012, India
Phone : 91-11-25842940, Fax: 91-11-2584 2938

@2024 ACASA-BISA

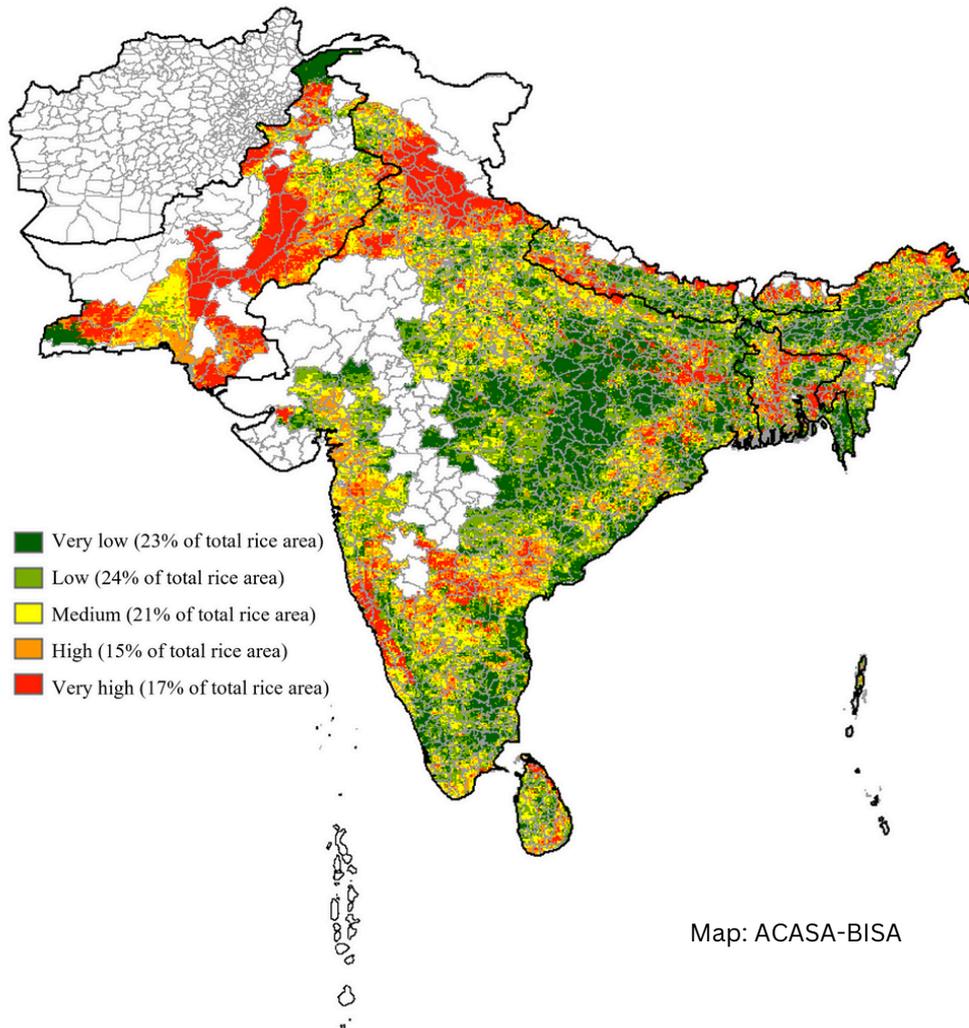
May 2024

INTRODUCTION

As South Asia's first climate adaptation Atlas, ACASA is focused on supporting smart climate investments for the benefit of region's agriculture. The Atlas will characterize climatic risks pertaining to a particular commodity at a granular level, assess the likely impact of climate change on the yield, and propose plausible adaptation options whilst assessing the economic suitability, viability, and environmental benefits of proposed technologies. ACASA is doing this analysis for 40 major commodities of South Asia belonging to cereals, legumes, oilseeds, fruits and vegetables, livestock, fisheries, and industrial and non-food crops.

This report shows the climate hazard index for rice and the suitability of direct seeded rice (DSR) dry as one of the proposed adaptation options. Its visualization in the test version of ACASA is also depicted. This methodology will subsequently be applied to other key commodities across South Asia.

HAZARD INDEX FOR RICE IN SOUTH ASIA

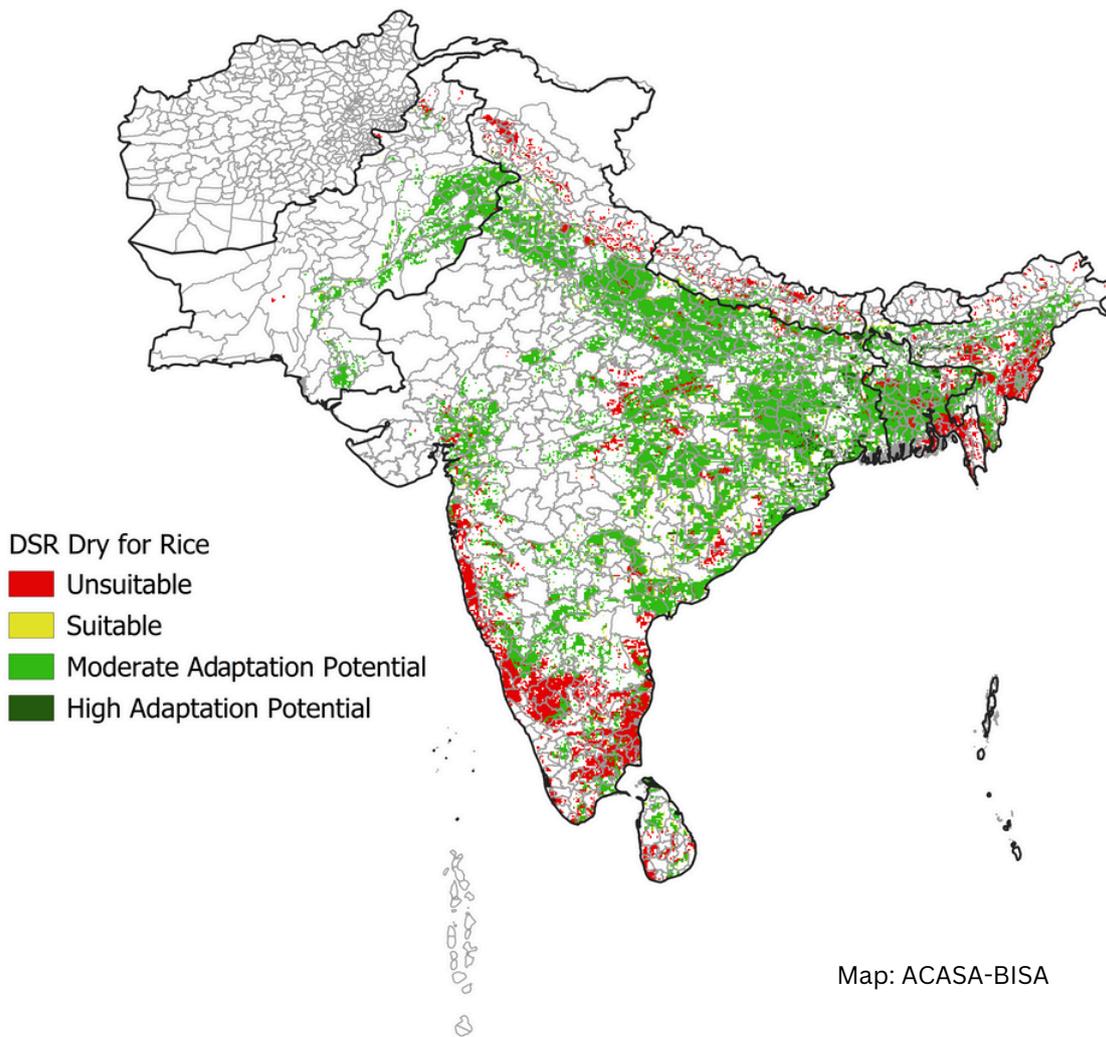


Methods

Gridded climate hazard index is computed by characterizing commodity-specific climate hazards during different crop growth periods and aggregating them to develop a comprehensive hazard index. This analysis is done for both current as well as future climate scenarios.

The illustration above shows composite hazard index for baseline climate for rice in South Asia. This index aggregates climate hazards specific to rice like high and low temperatures stress during anthesis which may lead to spikelet sterility, heat stress during the entire crop cycle, drought, delayed monsoon, dry spell and flood. This composite hazard index is further extended to a climate risk index by integrating exposure and vulnerability layers (currently not shown in the map).

ADAPTATION OPTION TO MANAGE CURRENT CLIMATE RISK FOR RICE: DIRECT SEEDED RICE (DSR)

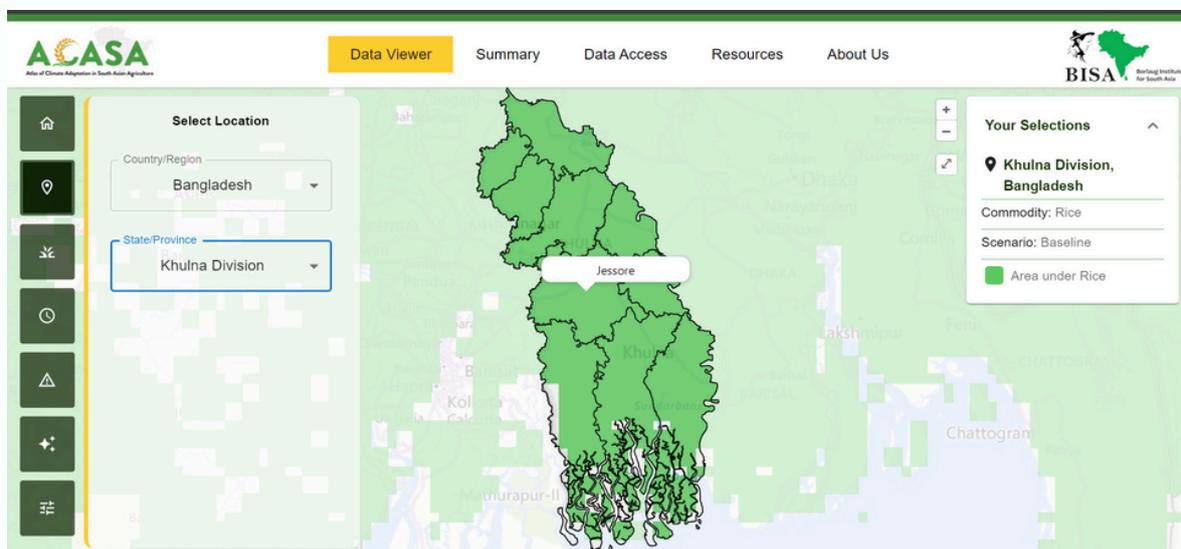
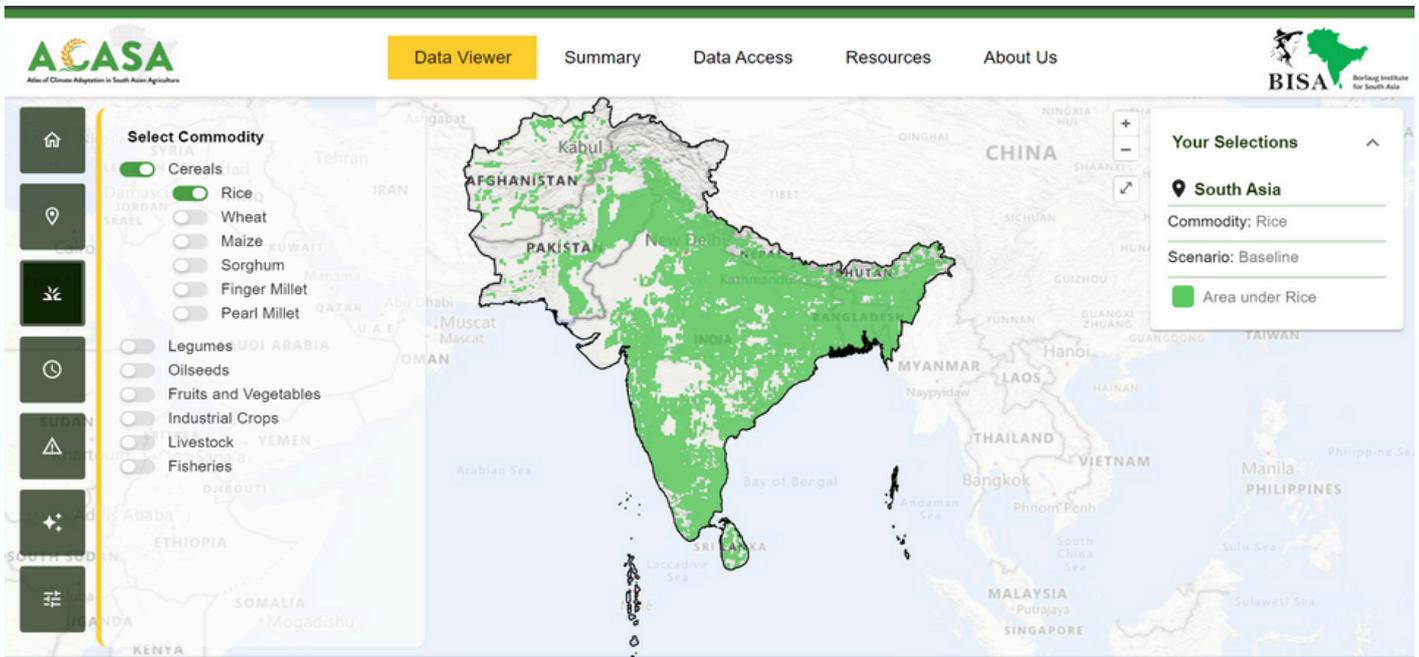


Methods

Stakeholder validated adaptation options are identified through a detailed analysis of suitability, adoption barriers, and scalability at village, district, and state level. A heuristic approach that considers climate risk, irrigation, labor, hazards, adoption barriers, and scalability of options is being used to identify adaptation options. The suitability of DSR dry as an option to manage current climate hazards for the case of rice in South Asia is represented above.

Whether this option would remain suitable in future in different regions is also being calculated.

ACASA WEBSITE



Images: ACASA-BISA

All data, maps, and reports of the project will be available on the ACASA website. It will integrate the visualization of key climatic hazards, risks, impacts, and adaptation options through an open-source, web-enabled, interactive, and dynamic Atlas. Images shown above can be referred as an example to the interface of ACASA's test version.

Borlaug Institute for South Asia (BISA)
International Maize and Wheat Improvement Center (CIMMYT)
CG Block B, NASC, DPS Marg, Pusa, New Delhi-110012, India
Phone : 91-11-25842940, Fax: 91-11-2584 2938

@2024 ACASA-BISA
May 2024

Cover image: CIMMYT

ACASA Management

Scientific Advisory Committee

Prof. Leigh Anderson, University of Washington, Seattle, USA; *Prof. Miranda Meuwissen*, Wageningen University, Netherlands; *Prof. Geetha Lakshmi*, Tamil Nādu Agriculture University, India; *Dr. Alex Ruane*, NASA Goddard Institute for Space Studies, USA; *Ms. Michiko Katagami*, Asian Development Bank, Manila, Philippines; *Dr. Pramod Joshi*, Ex Director-International Food Policy Research Institute, India; *Dr. Tess Russo*, BMGF, Seattle, USA; and *Dr. Pramod Aggarwal*, BISA-CIMMYT, Delhi, India

Project Leader

Pramod Aggarwal, Regional Program leader, BISA-CIMMYT, Delhi, India

Country Team Leads

Hasan Md. Hamidur Rahman, BARC, Bangladesh
CA Rama Rao, ICAR-CRIDA, India
Roshan B Ojha, NARC, Nepal
WMUK Rathnayake, NRMC, Deptt. of Agriculture, Sri Lanka

Project Funding

Bill and Melinda Gates Foundation (BMGF)

Project Timeline

December 1, 2022, to August 30, 2025

Contact Us

acasa@cgiar.org

Pramod Aggarwal

(p.k.aggarwal@cgiar.org)

Riya Gupta

Communication Officer, ACASA, BISA-CIMMYT, India
(r.gupta@cgiar.org)

About BISA

BISA is an international research institute established through a joint initiative between CIMMYT and ICAR, New Delhi, India, to implement the vision of the Nobel laureate Norman E. Borlaug. It aims to harness the latest genetic, digital, and resource management technologies and use research for development approaches to invigorate the region's agriculture and food systems to meet future demands.