AgMIP10

Responding to Climate Change Urgency

Tenth Global Workshop Report

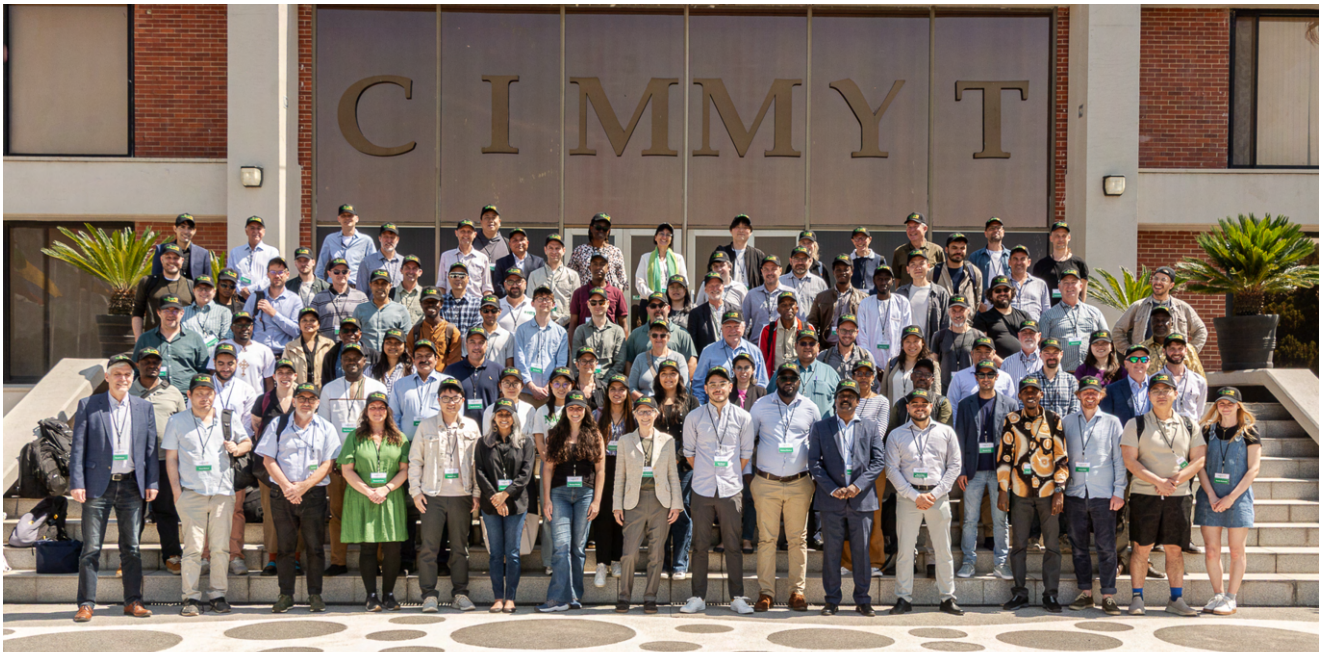
of the Agricultural Model Intercomparison and Improvement Project

March 31-April 4, 2025

International Maize and Wheat Improvement Center (CIMMYT)
El Batán, Mexico

ACKNOWLEDGEMENTS

The Tenth Global Workshop of the Agricultural Model Intercomparison and Improvement Project (AgMIP10) was hosted at the International Maize and Wheat Improvement Center (CIMMYT) in El Batán, Mexico. AgMIP extends its deepest gratitude to CIMMYT for its hospitality and support throughout the planning and duration of AgMIP10. AgMIP10 was made possible by contributions from its sponsors, including the Global Methane Hub, CIMMYT, the Columbia Climate School, Cornell University, Potsdam Institute for Climate Impact Research, Technical University of Munich, and the AgMIP World Food Prize Fund. We thank the members of AgMIP10's Abstract Selection Committee (R. Valdivia, H. Lotze-Campen, D. Mason D'Croz, P. Alderman, B. Carducci, J. Guarin, M. Yang, I. Athanasiadis, R. Boone, M. Corbeels, W. Ren, G. Falconnier, B. Basso, D. MacCarthy, D. Wallach, C. Müller, D. Pequeno, J. Jägermeyr, and A. Ruane), the AgMIP Executive Committee (S. Asseng, M. Herrero, H. Lotze-Campen, C. Rosenzweig, L. Tall, R. Valdivia, and A. Whitbread), and the AgMIP Coordination Unit (A. Ruane, T. Nipp, E. Mencos, N. Kozlowski, and K. Karl). The AgMIP10 Workshop Report was developed by N. Kozlowski and E. Mencos, with contributions from A. Ruane and C. Rosenzweig. The AgMIP10 Workshop Report was published on agmip.org on November 14, 2025.



AgMIP10

Responding to Climate Change Urgency

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IN MEMORIAM: DR. FRANCISCO MEZA

The AgMIP Community is deeply saddened by the news of Dr. Francisco Meza's passing on May 26, 2025. Francisco was a valued and long-standing member of the AgMIP community, a respected leader whose contributions had a lasting impact. Dr. Meza was a professor at the Facultad de Agronomía, Pontificia Universidad Católica de Chile, and Adjunct Professor of the Ohio State University. He served as Co-Chair of the AgMIP Steering Council from 2023 to 2025 and had been an active contributor since attending AgMIP's first global workshop in Long Beach back in 2010. We will remember Francisco not only as an outstanding researcher but also as a dear colleague and friend. He will be missed.

EXECUTIVE SUMMARY

The Tenth Global Workshop of the Agricultural Model Intercomparison and Improvement Project (AgMIP10) was held at the International Maize and Wheat Improvement Center (CIMMYT) in El Batán, Mexico, from March 31-April 4, 2025. AgMIP10 was a special opportunity for the AgMIP Community to gather at the home of the Green Revolution and to return to Latin America, where the first AgMIP Regional Workshop was held in 2011 and a second in 2013, both in Campinas, Brazil. Further, the Seventh Global Workshop of AgMIP (AgMIP7) was held in 2018 in San José, Costa Rica. AgMIP10 also marked a milestone in the timeline of AgMIP Global Workshops as the tenth major gathering of the AgMIP Community.

AgMIP10 convened 175 participants, with over 100 individuals in person and more than 50 people attending online, with 30 countries represented.

AgMIP10 featured six themes:

1. Technology Across Scales
2. Crop and Livestock Modeling
3. Model Application in Low-Yielding/Low-Data Environments
4. Climate Resilience for Food and Nutrition Security
5. Mitigation and Adaptation Co-Benefits and Life Cycle Analysis
6. Science-Policy Linkages for Food Systems

New focus areas were identified throughout the duration of AgMIP10 beyond the six key themes, including the need for increased diversity and gender inclusion, open science and data, increased knowledge transfer across teams, and strengthening AgMIP's capacity to engage with stakeholders.

The workshop concluded by looking to more frequent collaborations among AgMIP Teams, particularly at an upcoming regional workshop in South Asia, as well as other online events that will help foster more frequent and dynamic interactions. AgMIP10 wrapped up the week's events by looking toward AgMIP11, which is tentatively scheduled for early 2027 in Africa.

INTRODUCTION

The Agricultural Model Intercomparison and Improvement Project (AgMIP) was created in 2010 and has grown as a network to over 1,300 scientists and over 60 research teams. AgMIP is a global community of scientists, researchers, practitioners, policy-makers, and stakeholders working to improve food system data and models to advance their use and to support decision-making from farm to national to global scales.

The Tenth Global Workshop of the Agricultural Model Intercomparison and Improvement Project (AgMIP10) was held at the International Maize and Wheat Improvement Center (CIMMYT) in El Batán, Mexico, from March 31-April 4, 2025. AgMIP10 convened 175 participants, with over 100 individuals in person and more than 50 people attending online, with 30 countries represented. AgMIP10 featured six themes:

1. Technology Across Scales
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6. Science-Policy Linkages for Food Systems

Throughout the week of AgMIP10, a total of 47 sessions were held, including six Plenaries, 13 Paper Presentation Sessions, four Radical Collaboration Sessions, eight AgMIP Team Working Sessions, and 12 Side Team Meetings. AgMIP10 was a fully hybrid event, and all sessions featured both in-person and online attendees. Also throughout the week of the workshop, Poster Presentations were on display outside the main conference building, and participants were encouraged to spend time viewing the posters during coffee breaks, particularly.

The AgMIP10 Workshop Report provides an overview of the activities that took place throughout the week at CIMMYT, with recaps of each plenary session, complete lists of presentations, presenters, and workshop participants. Recordings of the workshop plenaries are available to view on the AgMIP YouTube page; links can be found in Appendix 3.

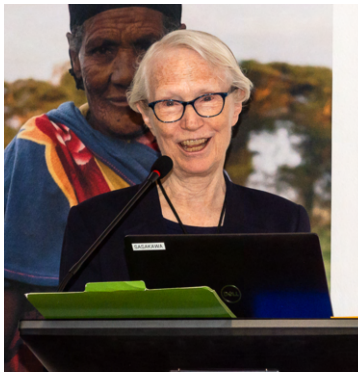
PRE-WORKSHOP PLANNING

Initial brainstorming for AgMIP10 began during the week of AgMIP9 with Dr. Sieg Snapp proposing for AgMIP10 to be hosted at CIMMYT. Official AgMIP10 workshop planning began in August 2024 and workshop fundraising began in October 2024. The AgMIP10 Science Committee consisted of Senthold Asseng, Vombayi Chimonyo, Mario Herrero, Hermann Lotze-Campen, Diego Pequeno, Alex Ruane, Sieg Snapp, Laure Tall, Geethalakshmi Vellingiri, and Anthony Whitbread. The Science Committee met biweekly in the lead up to the workshop provided guidance on the major workshop themes, programming, session types, and speakers.

The AgMIP10 abstract submission period opened in early December 2024 and notification of acceptance was sent in late January 2024. The AgMIP10 Abstract Selection Committee included Phil Alderman, Ioannis Athanasiadis, Bruno Basso, Randall Boone, Bianca Carducci, Marc Corbeels, Gatien Falconnier, Jose Guarin, Jonas Jägermeyr, Hermann Lotze-Campen, Dilys MacCarthy, Daniel Mason D'Croz, Christoph Müller, Diego Pequeno, Wei Ren, Alex Ruane, Roberto Valdivia, Daniel Wallach, and Meijian Yang.

DAY 1, APRIL 1

Opening Remarks



Dr. Cynthia Rosenzweig

Dr. Cynthia Rosenzweig kicked off AgMIP10 by welcoming participants to CIMMYT in El Batán, Mexico. Dr. Rosenzweig highlighted the significance of the conference taking place in Latin America; CIMMYT is the home of the Green Revolution, two AgMIP Regional Workshops took place in 2011 and 2013 in Campinas, Brazil, and the Seventh Global Workshop of AgMIP (AgMIP7) was held in 2018 in San José, Costa Rica.

Dr. Rosenzweig took a moment to highlight that AgMIP10 had 175 participants, with over 100 people in person and over 50 people attending virtually. Through these participants, 30 countries were represented. She also took a moment to call attention to the interdisciplinary nature of AgMIP10 and the various AgMIP fields of research represented, including agronomy, economics, and livestock, to name a few. She challenged the audience to continue collaborating across disciplines to better understand and model the entire agriculture and food system. Lastly, Dr. Rosenzweig emphasized the hybrid nature of AgMIP10; both in-person and virtual participants played a key and dynamic role in the workshop's activities.

Dr. Rosenzweig thanked the AgMIP10 Organizing Committee, which was chaired by Dr. Alex Ruane and Dr. Sieg Snapp, as well as the AgMIP10 Science Committee, which played an important role in creating the workshop program. She also thanked the AgMIP Coordination Unit, led by Erik Mencos Contreras and Natalie Kozlowski, for their logistical support in ensuring the workshop ran smoothly. Dr. Rosenzweig also thanked the Workshop Sponsors for their valuable contributions to supporting AgMIP10, including the Columbia Climate School, Cornell University, the Technical University of Munich, the Potsdam Institute for Climate Impact Research, the AgMIP World Food Prize Fund, CIMMYT, and the Global Methane Hub. Dr. Rosenzweig also extended a special thank you to CIMMYT for hosting the workshop and providing support in workshop preparations.

Welcomes

Dr. Bram Govaerts

Dr. Bram Govaerts, the Director General of CIMMYT, gave the AgMIP10 participants a virtual welcome. He applauded the workshop's ambitious program and its critical themes in agricultural modeling and climate resilience. Dr. Govaerts highlighted the long-term collaboration between AgMIP and CIMMYT, particularly in maize and wheat modeling initiatives. Lastly, Dr. Govaerts encouraged participants to build stronger connections with one another and explore new opportunities for increased impact and scaling.

Dr. Morven McLean, co-chair of the AgMIP Steering Council, welcomed participants and extended greetings from her co-chair, Dr. Francisco Meza. Dr. McLean highlighted the global importance of AgMIP and the need for evidence-based policy development in the current geopolitical climate. She also emphasized the role of AgMIP in generating tangible, real-world impacts and the importance of communicating those impacts to decision- and policy-makers. Lastly, Dr. McLean thanked Cynthia, Alex, Erik, and Natalie for their efforts in keeping AgMIP relevant and moving forward.

A few members of AgMIP's Executive Committee gave brief welcome remarks. Dr. Anthony Whitbread from the International Livestock Research Institute (ILRI) discussed his involvement in AgMIP since 2014 and the importance of connecting policymakers with models, particularly in crop-livestock systems. Dr. Laure Tall from IPAR shared her journey from agronomy to economics and emphasized the need for AgMIP to address larger issues and demonstrate real-world impacts. Dr. Herman Lotze-Campen from the Potsdam Institute for Climate Impact Research (PIK) highlighted the long-term collaboration between AgMIP and PIK and the importance of connecting climate, crop, and economic modeling. Dr. Lotze Campen shared a story about Norman Borlaug and the impact of scientific achievements on agriculture.

Drs. Hermann Lotze-Campen, Laure Tall, and Anthony Whitbread

Dr. Alex Ruane

Dr. Alex Ruane, AgMIP's Science Coordinator, welcomed participants and emphasized the importance of engaging with online attendees and fully embracing AgMIP10's hybrid nature. He thanked CIMMYT and the Executive Committee for their efforts in organizing the workshop. Dr. Ruane highlighted the challenges facing the food system and the need for models to explore new scenarios and solutions. Lastly, he encouraged participants to get outside their comfort zones, engage in radical collaboration sessions, and identify new challenges and initiatives.

Dr. Rosenzweig then gave an overview of the workshop agenda, including Side Meetings, Paper Presentation Sessions, Poster Presentations, Radical Collaboration Sessions, AgMIP Team Working Sessions, and themed lunches. She encouraged participants to engage with poster presenters during coffee breaks throughout the week and visit the AgMIP10 website to view virtual posters. Dr. Rosenzweig also stated that there would be field trips on April 1, 2, and 3 to the CIMMYT Museum, the CIMMYT Wellhausen & Anderson Genetic Resources Center, and a showcase of innovations and technologies for farmers. Lastly, she introduced the kickoff workshop plenary, Science-Policy Linkages for Food Systems.

Plenary: AgMIP10 Kick-off and Science-Policy Linkages for Food Systems

Chair: Cynthia Rosenzweig, *Columbia University*
Keynote: Manuel Otero, *IICA*
Hayden Montgomery, *Global Methane Hub*
Barron Orr, *UNCCD*
Kevin Pixley, *CIMMYT*

Dr. Manuel Otero

Dr. Manuel Otero, the Director General of the Inter-American Institute for Cooperation on Agriculture (IICA), delivered the keynote presentation for the Science-Policy Linkages for Food Systems plenary. He delivered his presentation in Spanish, and a live Spanish-English translation was provided.

Dr. Otero discussed the challenges and opportunities in Latin America and the Caribbean, and emphasized the need for a new narrative and generation of public policies. He called for a renewed vision of agriculture that actively contributes to food security, climate change mitigation, and energy transition. Dr. Otero explained that urbanization has transformed the region, which has changed food demand and value chains, causing farmers to be increasingly dependent on external markets and global value chains. He emphasized his continued optimism: Latin America is a major food exporter and a highly biodiverse region. Finally, Dr. Otero made a call for agriculture to evolve toward a circular, regenerative, and carbon-smart model. Science and innovation are essential to achieving this and ensuring inclusion, resilience, and food security across the region.

Dr. Rosenzweig, the session moderator, then introduced each panelist and posed questions for them to respond to.

Dr. Hayden Montgomery discussed the importance for funders and stakeholders to understand where and when specific rice production methods will be applicable globally and under different future climate scenarios. He introduced an ongoing project with CIRAD, CIAT, IRRI, AfricaRice, and others that aims to define spatial domains where aerobic rice is viable or necessary. Dr. Montgomery stated that the failure to adapt rice production systems could result in severe food insecurity and that more robust modeling is needed to support informed decisions by farmers, ranchers, and herders.

Dr. Barron Orr opened his presentation by stating that land is more than soil, but also includes water, ecosystems, and people, and that there is a growing focus on optimizing land use, which aligns with spatial modeling communities. He explained that the UN Convention to Combat Desertification (UNCCD) is focused on land degradation and drought resilience and that there is increased participation from local communities, Indigenous peoples, and gender groups. Dr. Orr concluded by issuing a call to action for the modeling community; the AgMIP community can improve land use models, standardize modeling approaches, integrate soils and alternative crops, and contribute to all three Rio Conventions.

Science-Policy Linkages for Food Systems panelists

Finally, Dr. Kevin Pixley opened by stating that over a decade of crop modeling has informed policy development, fundraising efforts, and targeted breeding programs. He discussed a use case of Biological Nitrification Inhibition (BNI) and stated that BNI could reduce nitrogen fertilizer use by ~15% in wheat. Dr. Pixley presented modeling results that show declining wheat yields by 2050, and explained that severe reductions in yield this year were due to less irrigated land being planted due to water shortages. He concluded by stating that increased nitrogen availability may be the most effective way to maintain yields under rainfed conditions; however, this conflicts with the aim to reduce nitrogen use in agriculture.

AgMIP Team Working Sessions

Following the opening plenary of AgMIP10, participants attended Working Sessions, with each group addressing the following questions:

- What are the main AgMIP activities in this area?
- How can new participants get involved?
- What are plans and priorities for the next year?

Session titles and leaders:

- WS1: Landscape-scale modeling & crop loss
  - Co-Chairs: Frank Ewert and Diego Pequeno
- WS2: Crop model improvement
  - Chair: Montse Salmeron
- WS3: Machine learning and data assimilation
  - Chair: Ioannis Athanasiadis
- WS4: Economics and trade modeling in a changing food system
  - Chair: Dominique van der Mensbrugghe

Lunch – Region

For lunch on Day 1, workshop participants were encouraged to sit with fellow participants from the same region. The regions were as follows:

- Sub-Saharan Africa
- Middle East & North Africa
- South Asia
- North and East Asia
- Australia & Oceania
- North America
- Central and South America & the Caribbean
- Europe

Tables were encouraged to respond to the following questions over lunch:

- What are the main agricultural systems, populations, and markets at risk of climate extremes and climate change in your region?
- What new AgMIP partnerships are needed to assess the changing nature of agricultural and food system risk in your region?
- How can we strengthen ongoing AgMIP partnerships to overcome technical and structural challenges to build a more productive and resilient future for food?

Plenary: Technology Across Scales

Chair: Christoph Müller, *PIK*
Keynote: Geraldo Martha, *EMBRAPA*
Daniel Mason-D'Croz, *Cornell University*
Frank Ewert, *ZALF*
Ioannis Athanasiadis, *WUR*
Sarah Garland, T*ripleHelix*

Technology Across Scales panelists

Dr. Manuel Otero, the Director General of the Inter-American Institute for Cooperation Dr. Christoph Müller introduced the keynote speaker, Dr. Geraldo Martha, for the next plenary session titled Technology Across Scales.

Dr. Martha discussed the need for long-term thinking in innovation due to lags between discovery, adoption, and impact in agricultural research. He noted that agricultural technologies are location-specific and must adapt to changing conditions such as climate, pests, and water availability. Dr. Martha highlighted three main technological frontiers: advanced biology, digital transformation, and sustainable production systems. He stated that effective policies require integrating economic and biophysical modeling to capture real-world dynamics and sustainability trade-offs. Dr. Martha concluded optimistically that Brazil and global agriculture have many opportunities through science, technology, and innovation, provided resources are aligned to drive sustainable transformation.

Dr. Müller then introduced each panel presenter and posed a set of questions for them to address in their presentations.

Dr. Daniel Mason-D'Croz discussed the importance of connecting biophysical and economic models to better represent the real world and avoid overly optimistic estimates. He also stated that technologies exist in bundles and have varying benefits and trade-offs; we must consider the environmental, health, and economic consequences of implementation. Dr. Mason-D'Croz concluded by explaining that we need to model complexities in a realistic yet manageable way and that this complexity makes the field rich with research potential and innovation.

Dr. Frank Ewert emphasized the numerous types of innovations that exist and the need for consideration of the regional context in agricultural research. He also remarked on the need for an integrated method of bridging science and practice effectively. Dr. Ewert concluded by stating that co-design and early engagement increase the likelihood that innovations will be adopted by practitioners and supported through policy.

Dr. Ioannis Athanasiadis highlighted the importance of digital innovation in agriculture and the need for better agricultural data to support digital transformation. He added that programming skills are becoming less essential as new tools allow broader access to crop and other types of modeling. Dr. Athanasiadis concluded by

AgMIP10 attendees participating in the Technology Across Scales Plenary

explaining that large language models can aid in translating results into many languages, increasing the reach of research.

Dr. Sarah Garland discussed the potential of crop biotechnology to achieve significant improvements in crop traits, and that biotech is one tool among many other technologies that can help achieve this. She also emphasized that biotech takes time; decisions must be made early and strategically to ensure future impact. Lastly, Dr. Garland stated that biotech needs to integrate scales and meet diverse local needs across different regions and farm sizes.

Paper Presentation Sessions

To wrap up Day 1, participants attended Paper Presentation Sessions, where presenters were encouraged to address the following question: What are the latest research results and key findings for applications?

Session titles and chairs:

- PS1: Regional integrated assessments of risk and adaptation options
  - Chair: Roberto Valdivia
- PS2: Improving crop models to capture seasonal climate responses
  - Chair: Kevin Karl
- PS3: Data assimilation and remote sensing
  - Chair: Jyoti Singh
- PS4: Modeling mitigation and solid
  - Chair: Pierre Martre

  Presenter List

Evening Reception

The participants of AgMIP10 were invited to a reception on the evening of Day 1, which included refreshments and a meal. Dr. Rosenzweig gave some brief words, followed by Dr. Purvi Meta, a Senior Advisor at the Gates Foundation. Dr. Rosenzweig then invited a number of early-career researchers to say a few words about their experiences as part of the AgMIP Community so far.

DAY 2, APRIL 2

Plenary: Model Application in Low-Yielding/Low-Data Environments

Co-Chairs: Anthony Whitbread and Dilys MacCarthy
Keynote: Gatien Falconnier, *CIRAD*
Jacob Emanuel Joseph, *ILRI*
Diego Pequeno, *CIMMYT*
Nataraja Subash, *ICAR*

Model Application in Low-Yielding/ Low-Data Environments panelists

Day 2 of AgMIP10 kicked off with the Model Application in Low-Yielding/Low Data Environments plenary session, which was co-chaired by Drs. Anthony Whitbread and Dilys MacCarthy co-chaired. They introduced the plenary's keynote speaker, Dr. Gatien Falconnier.

In his presentation, Dr. Falconnier discussed the challenges of low yields, inputs, data, and investment in smallholder systems, and emphasized the need for better management practices. He went on to highlight the impact of low yields on biodiversity and climate change mitigation, using examples from various regions around the world. Dr. Falconnier ended his keynote by issuing a call to action; by investing in better data and modeling, we can help smallholder farmers break the cycle of low-yield and low-input, therefore improving food security, biodiversity, and climate resilience for hundreds of millions worldwide.

The session co-chairs then introduced the panel participating in the plenary session.

Dr. Jacob Emanuel Joseph presented a collaborative approach to address data scarcity in low-yield environments, using a decision support tool called iSAT. He explains that this tool integrates scientific models with farmers' knowledge and decision-making experience, which the farmers own and use themselves. Dr. Joseph concludes by stating that iSAT has led to significant improvements in yield and that innovative use of local knowledge and modeling tools can transform farm productivity in data-poor settings.

Dr. Diego Pequeno presented on the challenges of simulating large-scale crop models with limited data, gaps in the input data, crop response information, and biotic and abiotic stresses. He emphasized the importance of local expert knowledge for accurate field-level representation. Dr. Pequeno concluded that large-scale crop modeling is possible, but it depends on creative data integration, collaboration with local knowledge holders, and continued efforts to fill critical data gaps.

Dr. Nataraja Subash shared his experience of modeling work in India. He explained that there is high variability in the agro-climatic zones and cropping systems of India on multiple scales. Dr. Subash discussed data availability and gaps, how to leverage emerging technologies for data collection, data enhancement techniques, remote sensing and machine learning, and how to better provide on-farm decision support tools. He concluded by stating that India's complexity requires integrated approaches of many tools to support modeling and decision-making.

Paper Presentation Sessions

The second session on Day 2 was another round of Paper Presentation Sessions. Presenters responded to the question: What are the latest research results and key findings for applications?

Session titles and chairs:

- PS5: Food systems, trade, and diets in a changing worlds
  - Chair: Mario Herrero
- PS6: Data and information technologies advances for agricultural modeling
  - Chair: Monique Oliveira
- PS7: Modeling dryland and other non-traditional/opportunity crops
  - Chair: Nataraja Subash
- PS8: Land, water, and climate modeling
  - Chair: Sonali McDermid

  Presenter List

Lunch – Gender

Following the Paper Presentation Sessions, the group went to lunch and was encouraged to focus on gender balance when choosing tables to sit at. The following questions were posed:

- Have you seen or experienced challenges associated with gender imbalance in your research or applications?
- How can we achieve a strong gender balance in AgMIP and beyond?
- How can AgMIP empower women in the technical, creative, stakeholder engagement, funding, and leadership spheres?
- How can AgMIP products better recognize societal gender inequities in the results of our assessments of agricultural risks?

AgMIP Team Working Sessions

After lunch, workshop participants broke into working sessions and aimed to address these questions:

- What are the main AgMIP activities in this area?
- How can new participants get involved?
- What are plans and priorities for the next year?

Dr. Ashfaq Chatta

Session titles and leaders:

- WS5: Regional assessment for adaptation and mitigation policy planning
  - Co-Chairs: Ashfaq Chatta and Roberto Valdivia
- WS6: Simulating opportunity crops & Low-input agricultural systems
  - Co-Chairs: Marc Corbeels, Antoine Couëdel, and Dilys MacCarthy
- WS7: Calibration, model, and modeler uncertainty
  - Co-Chairs: Daniel Wallach and Christoph Müller
- WS8: Modeling food system mitigation
  - Co-Chairs: Yushu Xia and Daniel Mason-D'Croz

Plenary: Crop and Livestock Modeling

Dr. Heidi Webber

Co-Chairs: Frank Ewert and Montse Salmeron
Keynote: Heidi Webber, *ZALF*
Santiago Cuadra, *EMBRAPA*
Jonas Jägermeyr, *Columbia University*
Randall Boone, *Colorado State University*

Drs. Frank Ewert and Montse Salmeron co-chaired the fourth plenary session of AgMIP10, Crop and Livestock Modeling, and introduced the session's keynote speaker, Dr. Heidi Webber.

Dr. Webber opened her address by acknowledging the demands on crop and livestock modelers, the great work being done by AgMIP's Teams, the global inequality in research representation, and posed a call to action to improve inclusivity and diversity within the research community. She structured her talk by outlining a compiled "wish list" for selected stakeholders and what they'd like to receive from modelers. Dr. Webber provided updates on work being done by various AgMIP Teams and reflected on how and if the Teams are meeting these wishes. She concluded by stating that it's not only about improving models, but also rethinking how we work as a community; more collaboration, equity, and demand-driven innovation are essential for meaningful impact.

Drs. Ewert and Salmeron introduced the rest of the panel participants and began the session's Q&A.

Dr. Santiago Cuadra discussed the agricultural insurance and risk industry and its imbalance in payouts to smallholder farmers. He also expressed the necessity of modeling to account for both diverse crop types and management practices to assess their effects on resilience. Dr. Cuadra explained that Brazil has insurance systems for many more crops than models currently exist for. He finished with a call for an expansion of modeling to minor and region-specific crops and the scaling of models to landscape-level simulations to support on-farm decision-making.

Dr. Jägermeyr highlighted several themes from the week, including the need for stronger integration across AgMIP Teams, improved collaboration, and more efficient internal knowledge sharing modeled after industry practices. He emphasized balancing harmonization with model diversity and expressed strong support for a centralized, accessible data platform to avoid redundant data collection. He also urged AgMIP Teams to better coordinate their conclusions so that policy-relevant insights are consistent and ready to use.

Dr. Randall Boone discussed using agent-based modeling to simulate livestock movement and behavior, outlining how behavior types are represented and applied in practice. He noted the computational challenges of modeling individuals and questioned when the added cost is justified. He also described the key pathway from forage acquisition to energy intake and expenditure, the value of coupled systems modeling, and the uncertainties introduced by scale. He concluded by emphasizing the need to balance model complexity with usability and relevance.

DAY 3, APRIL 3

AgMIP Feedback Drop-In

Participants in the Feedback Drop-In session

To kick off Day 3, the AgMIP Executive Committee hosted a feedback session for community members to stop by and share their thoughts on how AgMIP can improve structurally and functionally. Key themes discussed during this session for AgMIP to improve on include inclusion and gender, accessibility to early-career researchers and those in developing contexts, increased collaboration among AgMIP Research Teams, and making AgMIP research and results relevant and accessible to stakeholders.

AgMIP and EAT-Lancet Plenary

To open the first plenary session of Day 3, Dr. Mario Herrero gave a special keynote on the EAT-Lancet 2.0 Initiative. Drs. Laure Tall and Hermann Lotze-Campen introduced Dr. Herrero and highlighted his ongoing contributions to AgMIP. In his presentation on EAT-Lancet 2.0, Dr. Herrero detailed how the new study focuses on the quantification of dietary changes and their impact on the planetary boundaries. The study includes scenarios for dietary change, agricultural productivity, and food loss and waste reduction. Dr. Herrero emphasized the importance of behavioral change in achieving dietary goals and the need for stakeholder engagement. Dr. Herrero then invited a few other AgMIP contributors to EAT-Lancet 2.0, including Dr. Lotze-Campen and Dr. Ignacio Pérez Domínguez, to discuss their takeaways from the initiative.

Plenary: Climate Resilience for Food and Nutrition Security

Co-Chairs: Laure Tall and Mario Herrero
Keynote: Tafadzwanashe Mabhaudhi, *LSHTM*
Vimbayi Chimonyo, *CIMMYT*
Pierre Martre, *INRAE*
Kevin Karl, *Columbia University*

Dr. Tall introduced the next speaker, Dr. Tafadzwanashe Mabhaudhi, for the Climate Resilience for Food and Nutrition plenary. Dr. Mabhaudhi discussed his ongoing research on building sustainable and inclusive food systems in Sub-Saharan Africa, with a focus on South Africa. A major focus of his work has been on diversifying food systems through the modeling and promotion of underutilized or “opportunity” crops, which can enhance climate resilience, nutrition, and socio-economic inclusion. This work also collaborates with farmers to evaluate nutrition and dietary patterns and holds community-based events. Dr. Mabhaudhi emphasized the importance of translating data into wisdom, or moving from raw data to actionable knowledge that benefits people.

The moderators then introduced the rest of the panelists and proceeded to the Q&A.

Dr. Vimabyi Chimonyo discussed the challenges of heat stress and food insecurity by sharing a story about a smallholder farmer in Beitbridge, Zimbabwe. Through this story, Dr. Chimonyo underscored the key message that sustainability solutions must consider people, place, and context. Scientists have a responsibility to move toward approaches that support human well-being. She concluded by emphasizing the need for integrated crop management and behavioral models to understand farmers' constraints and decisions better.

Dr. Pierre Martre discussed the role of crop nutrition in strengthening cropping system resilience and ensuring both food and nutritional security. He explained that nutrients beyond nitrogen, such as phosphorus, iron, and zinc, and essential for crop productivity and human health. He emphasized that sustainable solutions must combine improved fertilizer efficiency, recycling, crop rotations, and genetic gains in nutrient efficiency. Dr. Martre concluded that fully modeling all nutrients is impractical, but integrated assessments offer a practical way forward to better represent nutrient dynamics and guide sustainable nutrient management.

Climate Resilience for Food and Nutrition Security panelists

Mr. Kevin Karl presented on the potential of opportunity crops to support climate-resilient and diversified food systems in Sub-Saharan Africa. By working with stakeholders, his work identified promising crops across all food groups – cereals, legumes, roots and tubers, nuts and oilseeds, and fruits and vegetables. He emphasized that these crops will require investment, which is sometimes difficult for farmers to adopt unless they perceive immediate value. Mr. Karl concluded by stating that food system diversification must be holistic and combine science, culture, economics, and equity.

Paper Presentation Sessions

For the next morning session of Day 3, the final Paper Presentation Session took place. Presenters were posed with the following question: What are the latest research results and key findings for applications?

Session titles and chairs:

- PS9: Landscape-scale modeling and crop losses
  - Co-Chairs: José M. Fernandes and Diego Pequeno
- PS10: Developing crop and livestock model products for practical application
  - Chair: Ken Boote
- PS11: Science of calibration, configuration, and ensembles
  - Chair: Daniel Wallach
- PS12: Projections of future crop productivity
  - Co-Chairs: Chenzhi Wang and Xuhui Wang
- PS13: Food systems, nutrients, and health
  - Chair: Nathaniel Springer

Presenter List

Lunch – Career Stages

For the final group lunch, the group was tasked with sitting at a table with a diverse array of researchers from all career stages, early, middle, and late, and answer the following questions:

- What is the best way to find an entry point into a big community like AgMIP?
- How can we identify cutting-edge problems and projects that will distinguish our careers?
- How can we blend technical expertise and connections into broader contexts and applications?
- What are the emerging technologies and methods that more established scientists need to learn to keep up with new generations?

Plenary: Mitigation and Adaptation Co-Benefits and Life Cycle Analysis

Chair: Hermann Lotze-Campen
Keynote: Sonali McDermid, *NYU*
Yushu Xia, *Columbia University*
Tek Sapkota, *CIMMYT*
Pablo Manzano, *Basque Centre for Climate Change*

Mitigation and Adaptation Co-Benefits and Life Cycle Analysis panelists

Dr. Hermann Lotze-Campen introduced Dr. Sonali McDermid as the final plenary speaker of AgMIP10. Dr. McDermid presented her work with AgMIP on mitigation and adaptation co-benefits, focusing on rice systems and the potential for alternate wetting and drying (AWD) and system of rice intensification (SRI) to reduce methane emissions and conserve water. She discussed the challenges of scaling AWD and SRI, including labor issues, gender dynamics, and the impact of a changing climate on soil health and water use efficiency. Dr. McDermid highlighted the importance of data collection and stakeholder engagement in understanding the adoption and disadoption of AWD and SRI practices. Finally, she raised a broader question about who is responsible for mitigation in agriculture and who decides what outcomes are prioritized.

Dr. Tek Sapkota began his presentation by introducing the food systems approach to climate action, which examines the climate impacts and solutions across all activities in the food value chain. He stressed the need for both mitigation and adaptation across the food system, not just in production, due to its large contribution to anthropogenic greenhouse gas emissions. He also emphasized that it is particularly difficult for smallholder farmers to implement mitigation actions while ensuring food and nutritional security. Dr. Sapkota concluded by stating that food systems offer some of the most cost-effective mitigation options compared to other sectors.

Dr. Yushu Xia highlighted a new AgMIP project titled Farm Practice-MIP with the goal of advancing agricultural accounting of carbon sequestration, productivity, and greenhouse gas emissions. The project will develop a scalable modeling system

from the field to the national level and build decision-support tools for farmers and policymakers. The five-year project aims to expand globally and share data, methods, and insights across the AgMIP Community.

Dr. Pablo Manzano discussed the need for transdisciplinary approaches to better understand the impacts of livestock systems in the context of climate adaptation and mitigation. In his work with the Basque Centre for Climate Change, he found that many emissions from a pastoralist area and the Serengeti National Park, both in Tanzania, were very similar and attributed to grazing livestock and natural ecosystems, not strictly anthropogenic. Dr. Manzano highlighted the need to reconsider how grazing systems are represented in global emission inventories and reframe narratives on diets and livestock emissions.

Radical Collaboration Sessions

For the last breakout session of AgMIP10, participants attended Radical Collaboration Sessions and were tasked with answering the following questions:

- What challenges need new partnerships in this area?
- How can we overcome barriers to progress?
- What new AgMIP activities are needed to enable progress?

Session titles and chairs:

- RCS1: Planetary boundaries, biodiversity, and water quality on agricultural landscapes
  - Co-Chairs: Tafadzwa Mabhaudhi and Kevin Karl
- RCS2: Known unknowns in crop impact projections
  - Co-Chairs: Rogério de Souza Nóia Júnior and Ignacio Pérez Domínguez
- RCS3: Agricultural adaptation and mitigation pathways and limitations
  - Co-Chairs: Florian Zabel and Jonas Jägermeyr
- RCS4: Models as a tool for crop breeding
  - Co-Chairs: Matthew Reynolds and Wei Xiong

Final Plenary Wrap-Up

In the final group plenary of AgMIP10, Dr. Rosenzweig thanked the participants, both in person and online, for their contributions. She also expressed gratitude to the sponsors of AgMIP10, the Science Committee, and the workshop organizers, particularly the team at CIMMYT that worked closely with the AgMIP Coordination Unit. Dr. Rosenzweig also introduced the newest member of the AgMIP Executive Committee, Dr. Roberto Valdivia. She called on other Executive Committee members to share their key takeaways from the week and their final thoughts.

Dr. Rosenzweig concluded the workshop by making announcements of other upcoming AgMIP events that are in planning, including a regional workshop in South Asia. Finally, she announced that AgMIP11 is tentatively scheduled for early 2027, with a potential location in Nairobi, Kenya, and asked participants to mark their calendars.

SIDE MEETINGS

Side Meetings took place on Monday, March 31, and Friday, April 4, at the main workshop venue. While most Side Meetings were open to all AgMIP10 participants, there were a select number of meetings that were closed sessions.

March 31

- Global Gridded Crop Modeling Intercomparison (Closed)
  - Leaders: Christoph Müller and Jonas Jägermeyr
- AgMIP Wheat
  - Leaders: Heidi Webber, Frank Ewert, Pierre Martre
- AgMIP Ozone
  - Leader: Jose Guarin
- Global Economics Team/EAT-Lancet 2.0 Commission
  - Leader: Herman Lotze-Campen
- Global Gridded Crop Modeling Intercomparison (AgMIP Community)
  - Leaders: Christoph Müller and Jonas Jägermeyr
- Low-Input Systems (Soil Organic Matter & Intercropping Modeling)
  - Leader: Antoine Couëdel
- Crop Model Calibration
  - Leader: Daniel Wallach

April 4

- Modeling Territorial Socio-Ecosystems
  - Leader: Vimbayi Chimonyo
- AgMIP Soybean
  - Leader: Montse Salmeron
- Food System Emissions
  - Leader: Kevin Karl
- Rice Modeling for Mitigation and Adaptation
  - Leader: Erik Mencos
- Impacts and Attribution of Excessive Rainfall and Drought: Maize Yield in Low-Input Smallholder Systems
  - Leader: Gatien Falconnier

PAPER PRESENTATION SESSION PRESENTERS

April 1

PS1: Regional Integrated Assessments of Risk and Adaptation Options

- Reza Deihimfard (Virtual): Maize crop could escape from extreme temperatures under arid-based climate types when an optimal combination of cultivar x sowing date applied
- Gatien Falconnier: Identifying priority areas for risk management in sub-Saharan Africa: the case study of maize intensification in semi-arid Senegal
- Fernando Orduna-Cabrera: Coffee Short-term Yield Prediction using Seq2Seq over an LSTM model
- Folorunso M. Akinseye (Presentation by Jacob Emanuel): Do climate-smart management practices minimize the risk for millet productivity under climate change? Modeling approach
- Subash Nataraja Pillai: Integrated Adaptation Strategies for Rice-Wheat based production system at Farmer fields - Present and future Scenario with multiple crop and climate models linked with Socio-Economic situations
- Bram Peters (Presentation by Marcos Dominguez Viera): Foresight for Food Systems Transformation: Experiences with simulation modelling and participatory foresight processes in Bangladesh and Jordan
- Bram Peters (Presentation by Monika Zurek, Keith Wiebe, and Johannes Svensson): Comparing Food Systems Simulation Models: Getting the Use Case Right

PS2: Improving Crop Models to Capture Seasonal Climate Responses

- Meijian Yang: Paving the way for adapting opportunity crops in Africa through novel climate-crop models
- Santiago Cuadra: Application of an ensemble of high-resolution Regional Climate Model simulations for crop yield estimation in southern Brazil
- Bruce Kimball (Virtual): Improvement in Soil Temperature Simulation Ability of the DSSAT-CSM Model
- Sue Walker: Climate Outlooks Generating Advisories for Indonesian Farmers Science Field Shops
- Monique Oliveira: Good practices for crop yield modeling with machine learning: feature design using CY-Bench as an example
- Xin Ge: Improving predictions of stomatal conductance and evapotranspiration under combined heat and drought for wheat
- Rogério de Souza Nóia Júnior: Simulating wheat growth responses to waterlogging

PS3: Data Assimilation and Remote Sensing

- Gabriel Mulero: Machine learning modeling of wheat's LAI using drone-based LiDAR and hyperspectral imagery
- Ben Jones: Combining broad and deep datasets to improve the simulation of high-yielding wheat crops
- Yuval Sadeh (Virtual): Satellite-Based Field-Scale Yield Estimation in Data-Limited Environments
- Baktybek Duisebek: Using satellite-based monitoring system to assess the crop water use across Ili River, Kazakhstan
- Meijian Yang: Integrating Remote Sensing and the DSSAT Model with Near-Real-Time Data Assimilation for Improved Decision Support
- Fang Li (Virtual): GlobCropCalendar: a global 0.05°-gridded calendar dataset for major crops from 2000 to 2021

PAPER PRESENTATION SESSION PRESENTERS

April 1 (cont.)

PS4: Modeling Mitigation and Soils

- Nathan Torbick (Virtual): Scaling rice dMRV impacts across diverse landscapes
- Oumnia Ennaji: The assessment of soil variables relative importance for cereal yield prediction under rainfed cropping system in Morocco
- Antoine Couëdel: Soil fertility loss exacerbates climate change impact on maize yield in sub-Saharan Africa, a multi-model study
- Pierre Martre: Enhancing agricultural system predictions through model component exchange: A case study on soil temperature models using Crop2ML<
- Mariaelisa Polsinelli: Process-Based Modelling for N2O Emission Estimation at the Field-Scale in Atlantic Canada
- Toshihiro Hasegawa (Virtual): Estimating Methane Emissions and GHG Mitigation: New Opportunities for the AgMIP Rice Team
- Robert Beach: Marginal Abatement Cost Curves for Reducing Non-CO2 Greenhouse Gas Emissions from Global Agricultural Production through 2080

April 2

PS5: Food Systems, Trade, and Diets in a Changing World

- Nathaniel Springer: Measuring the sustainability footprint of the U.S. food and agriculture system with the FoodS3 model: new approaches to quantify system resilience
- Maksym Chepeliev: Bending the curve of food loss and waste (FLW) generation requires coupling global dietary shifts with targeted FLW reduction policies
- Siwa Msangi (Virtual): The importance of aquaculture in global analyses of food & energy futures: the competition for feed
- Ron Sands (Virtual): Global to State Modeling Framework for Agriculture
- Donagh Hennessy: The use of agriculture-economic models in food system assessments: a multi-model comparison of estimates, data sources, aggregations, and model structures
- Maksym Chepeliev: How global transition to healthier diets might impact agricultural trade

PS6: Data and Information Technologies Advances for Agricultural Modeling

- Chenzhi Wang: Climatic drivers of crop yield variability and failure in SSA
- Xinxin Chen: Bridging literature and models: a workflow for harmonizing agricultural datasets for model calibration using AI
- Ahmed Kheir (Virtual): Enhancing Agroforestry Simulations through the Integration of Machine Learning and Hi-sAFe process-based model
- Mark Lundy: Nitrogen nutrition index for global N2O emissions monitoring
- Benjamin Leroy (Presentation by Frank Ewert): Harnessing FAIR data management to streamline data integration for crop model applications
- Allard de Wit: AgERA5 v2: an improved dataset on daily global weather since 1979 for applications in agriculture
- Michiel Kallenberg (Presentation by Pratishtha Poudel): CY-Bench: A comprehensive benchmark dataset for sub-national crop yield forecasting

PAPER PRESENTATION SESSION PRESENTERS

April 2 (cont.)

PS7: Modeling Dryland and Other Non-Traditional/Opportunity Crops

- Zaid Bello: Modelling climate impact on pigeon pea production in a semi-arid area of South Africa
- Soeren Lindner (Virtual): Predicting short-term yield changes in perennials for economic risk analysis using machine learning: A case study of agroforestry coffee production in 4 states of Mexico
- Krishna Devkota: A Novel Date Palm Yield Modeling Using APSIMx and AquaCrop (Model Development and Intercomparison)
- Kenneth J. Boote: Modeling Under-utilized Crops in DSSAT – Approaches and Examples
- Jacob Emanuel Joseph: Linking farmer knowledge with modelling for developing climate risk strategies for crop-livestock systems in semi-arid Tanzania
- Tony Carr: Building Resilience to Climate Change: The Potential of Neglected and Underutilised Crops in Mitigating Crop Failure and Improving Nutritional Diversity in South Africa
- Zenebe Mekonnen Adare (Virtual): Soil Fertility Dynamics and Xanthomonas Wilt Incidence in Enset (Ensete Ventricosem) Based Farming at Chencha, Southern Ethiopia
- Dilys MacCarthy: Towards a Food Secure Future under Changing Climate in Ghana: The Role of Opportunity Crops

PS8: Land, Water, and Climate Modeling

- Audrey Brouillet (Virtual): Increasing rainfall locally offsets the adverse historical global warming effect on maize yields in low-input systems in Africa according to crop models
- Florian Zabel: CropSuite – A new comprehensive open-source crop model: Climate change impact assessment for 48 crops in Africa considering climate variability
- Thomas Oberleitner: Identifying Drivers of Yield Anomalies in Global Gridded Crop Models Using Machine Leaning
- Heidi Webber: Systematic underestimation of daily water use in wheat crop models: the case for semi-arid and Mediterranean environments
- Edna Molina Bacca (Presentation by Hermann Lotze-Campen): Land-use pattern projections and their uncertainty under global change
- Kevin Karl: Participatory Modeling of Climate-Adaptive Agricultural Practices in the New York City

April 3

PS9: Landscape-Scale Modeling and Crop Losses

- Yiwei Jian: Towards attribution of the 2022 European maize failures to anthropogenic climate change
- Fekremariam Mihretie: Productivity and Resource Use Efficiency of Legume-Based Cropping Systems in Southeastern Australia
- Lennart Jansen: Attributable and projected economic losses for German agricultural production due to climate change using an integration of crop and land use models
- Willingthon Pavan (Virtual): Simulating Fusarium Head Blight Risk and Mycotoxin Contamination Using an Integrated DSSAT-GDM Framework
- Jose Guarin (Virtual): Simulating impacts of tropospheric ozone and climate change on global agricultural production
- Jack Rawden: Mapping the global distribution of pollinator dependence in wild plants
- Henrique Haas (Virtual): Integrating Ecosystem Dynamics and Hydrologic Modeling to Assess Climate Change

PAPER PRESENTATION SESSION PRESENTERS

April 3 (cont.)

PS10: Developing Crop and Livestock Model Products for Practical Application

- Ranju Chapagain (Virtual): Enabling climate resilience through integrated economic, environmental and social adaptation
- Samar Attaher: Integrated Data-Fusion Platform for Smart Nitrogen Management of Wheat
- Alex Ruane (Virtual): A Virtual Agricultural Innovations Laboratory (AVAIL) – combining NASA resources for multi-perspective decision support for Iowa Corn and beyond
- Peter Mwangi Muchiri (Virtual): Aquacrop model approach and Geographic Information System (GIS) for enhanced decision making in Climate-Smart Agriculture interventions, Kitui County, Kenya
- Siyabusa Mkuhlani: AgWise: Spatio-temporal yield prediction for sowing and variety recommendations in Ghana
- Krishna Devkota: Optimizing Forage Crop Production Under Open-Field Conditions: A Comprehensive AquaCrop Simulation and Sensitivity Analysis
- Felix Bruckmaier: Data-driven Irrigation Management for Everybody? - ¡Dime!
- Balaji Sesha Srikanth Pokuri (Virtual): EnMISSION : Environmentally Aware Model Predictive In-Season Scheduling of Irrigation and/or Nitrogen fertilizer
- Kenneth J. Boote: Adapting the CROPGRO-Perennial-Forage-Model to Simulate Napiergrass

PS11: Science of Calibration, Configuration, and Ensembles

- Mercy Appiah (Virtual): Linking genetic information (QTLs) to crop model parameters to improve prediction of ecophysiological traits for barley ideotype design
- Daniel Wallach: A calibration protocol for crop models
- Samuel Buis: Software solutions for crop model calibration: The use of CroptimizR and CroPlotR in AgMIP
- Cyrille Ahmed Midingoyi: A Distributed Framework for Gridded Crop Model Ensembles : Advancing Agricultural Applications and Addressing Computational Challenges
- Hossein Zare: A Scalable Approach to Grassland monitoring: Remote Sensing and Process-Based Modeling

PS12: Projections of Future Crop Productivity

- Vidur Mithal: How do climatically-driven low crop yields change with global warming levels?
- Christian Folberth: Informing crop growing season adaptation using crop model emulators
- Asmae Meziane (Virtual): Calibrating CERES-Barley for Ideotyping Climate-Smart Spring Barley under German Growing Environments
- Raniero Della Peruta: Regional-scale, process-based modelling of arabica coffee yields under future climate scenarios
- Babacar Faye: Evaluating crop yield variability in Senegal using machine learning approaches
- Jose Guarin (Virtual): Evidence for increasing global wheat yield potential
- Jonas Jägermeyr: Global Gridded Crop Modeling Intercomparison

PAPER PRESENTATION SESSION PRESENTERS

April 3 (cont.)

PS13: Food Systems, Nutrients, and Health

- Ignacio Pérez Domínguez: Economic Assessment of the Potential Contribution of Carbon Farming to the EU's 2050 Climate Neutrality Targets
- Ahmed Kheir (Virtual): Optimizing Spatial Simulations of Wheat Yield and Nutritional Quality through the Integration of CMs, RS, and ML
- Marco Springmann (Virtual): Developing scenarios of healthy and sustainable diets for food system assessments
- Robert Beach: Impacts of climate change on nutrient availability for women of reproductive age
- Kirsten Verburg (Virtual): Towards global system perspectives on the possible benefits of biological nitrification inhibition using agricultural systems modelling
- Gianmaria Tassinari: A Deep-Dive of the EAT-Lancet 2 Global Diet into European Food Systems

POSTER PRESENTATIONS

AgMIP10 featured both in-person and virtual poster presentations. In-person posters were hung outside of the main workshop building and were available for viewing during coffee breaks April 1-3. Virtual poster presentations were added to the AgMIP10 webpage, which can be viewed **here**.

- Hamza Briak: Assessing Wheat Adaptability in Semi-Arid Morocco Using the APSIM Model: Implications for Climate-Smart Agriculture
- John Porter: Modelling from ideotypes to ideosystems
- Shuaiqi Wu: A Gridded Version of AquaCrop Calibrated by Bayesian Inference and Machine Learning for Maize across the US
- Abir Dey: Carbon dioxide removal and soil reclamation using principles of enhanced rock weathering in an acidic Indian soil (virtual)
- Abir Dey: Use of Seaweed extract-based biostimulants for enhancing nutrient use efficiency and grain quality in an Indian acid soil (virtual)
- Ruth Sitienei: Advancing the Denitrification and Decomposition Model for Simulating Carbon Decomposition and Carbon dioxide Emissions from Biosolids and Manure Amended Cropland
- Gabriel Mulero: WheatDryFACE Project: Multi-aspect response of wheat genotypes to future climatic-environmental conditions (elevated CO2 and drought)
- Monique Oliveira: A role for regression trees in the calibration of a new process-based crop model
- Siyabusa Mkuhlani: AgWise: A Modular Framework for Agronomic Recommendations Using Big Data Analytics and Advanced Modeling to Support Smallholder Farmers in SSA
- Yaron Michael: Heatwave Effects on Maize–Soybean Cropping Systems Under Future Conditions: A Functionality-Based Crop Model Evaluation
- Ward Smith: Yield projections and expansion opportunities under future climate change for seven major crops grown in Canada using a model ensemble
- Yean-Uk Kim: Groundwater influences should be considered in crop risk assessments
- Mokhele Moeletsi: Trends of nitrous oxide emissions from applications of nitrogen fertiliser in South Africa
- Paresh Bhaskar Shirsath: High-Resolution Gridded Datasets for Spatial Crop Simulations in South Asia: Integrating Local and Global Data Sources
- Mary Ollenburger: Connecting process-based models with the Food System Supply-chain Sustainability Model (FoodS3) to address water use in the food system
- Rogério de Souza Nóia Júnior: Drought events analogues in European wheat production systems
- Montse Salmeron: Evaluation of soybean multi-model responses to elevated CO2 with experimental data

POSTER PRESENTATIONS

- Montse Salmeron: Multi-site evaluation of soil temperature routines with DSSAT-CROPGRO-Soybean
- Pilar Espitia: Agronomic strategies to mitigate the yellow berry character in durum wheat in the face of input and water scarcity (virtual)
- Xuhui Wang: Air temperature thresholds of extreme heat exposure for maize and soybean in Northern Hemisphere breadbaskets
- Liangliang Zhang: Inventory of methane and nitrous oxide emissions from freshwater aquaculture in China
- Jyoti Singh: Improving the Representation of Water Logging in DSSAT for Extreme Climate Scenarios
- Powell Mponela: MASSAI: Multi-agent system for simulating sustainable agricultural intensification of smallholder farms in Africa
- Salar Mahmood: Global attainable maize yield shifts under climate change and varying fertilisation strategies

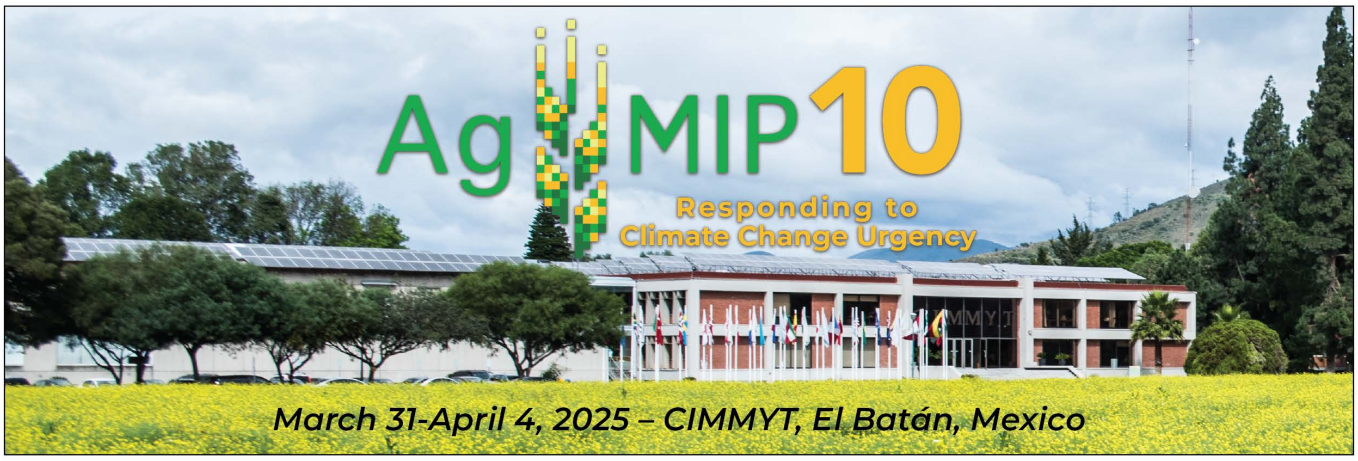
CONCLUSIONS AND WAY FORWARD

AgMIP10 was a special opportunity for the AgMIP Community to gather at CIMMYT, the home of the Green Revolution, and to return to Latin America, where an early AgMIP Regional Workshop was held in 2013, in Campinas, Brazil. It also marked a milestone in the timeline of AgMIP Global Workshops as the tenth major gathering of the AgMIP Community.

Focus areas were identified throughout the duration of AgMIP10 beyond the six key themes, including the need for increased diversity and gender inclusion, open science and data, increased knowledge transfer across teams, and strengthening AgMIP's capacity to engage with stakeholders.

The workshop concluded by looking to collaborate more frequently among AgMIP Teams, particularly at an upcoming regional workshop in South Asia, as well as other online events that will help foster more frequent and dynamic collaboration. The AgMIP10 group wrapped up the week's events by looking toward AgMIP11, which is tentatively scheduled for early 2027.

APPENDIX 1: AGENDA



Workshop Themes

1. Science-Policy Linkages for Food Systems
2. Technology Across Scales
3. Model Application in Low-Yielding/Low-Data Environments
4. Crop and Livestock Modeling
5. Climate Resilience for Food and Nutrition Security
6. Mitigation and Adaptation Co-Benefits and Life Cycle Analysis

Monday, March 31, 2025: Side Meetings

If you would like to attend a meeting, please contact the session Leader(s) for more information.

Time	Session	Leader(s) Contact Info	Room
08:30-09:00	**Arrival & Registration** *Light breakfast provided*		KMIT Lobby
09:00-12:00	Global Gridded Crop Modeling Intercomparison (Internal Planning)	cmueller@pik-potsdam.de jonas.jaegermeyr@columbia.edu	N/A (Closed)
	AgMIP Wheat	Heidi.Webber@zalf.de Frank.Ewert@zalf.de, pierre.martre@inrae.fr	Contact Session Leader
	AgMIP Ozone	jrguarin@outlook.com	VC09
	Global Economics Team/EAT-Lancet 2.0 Commission	lotze-campen@pik-potsdam.de	KMIT Open Area
13:00-16:00	Global Gridded Crop Modeling Intercomparison (AgMIP Community)	cmueller@pik-potsdam.de jonas.jaegermeyr@columbia.edu	KM11 A&B
	Low-Input Systems (Soil Organic Matter & Intercropping Modeling)	antoine.couedel@cirad.fr	KM10
	Crop Model Calibration	wallach.mathmod@gmail.com	KMIT Open Area

APPENDIX 1: AGENDA

Day 1: Tuesday, April 1, 2025		2
Time	**Session**	**Room**
08:00-09:00	**Arrival & Registration** *Light breakfast provided*	KMIT Lobby
09:00-09:50	**Welcome and Introductory Remarks** Bram Govaerts, *CIMMYT* Morven McLean, *Steering Council Co-Chair (virtual)* AgMIP Executive Committee Alex Ruane, *AgMIP Science Coordinator (virtual)* **AgMIP10 Kick-off Plenary** Manuel Otero, *IICA* Cynthia Rosenzweig, *Columbia University*	KMIT Auditorium
09:50-10:30	**Session 1 Plenary: Science-Policy Linkages for Food Systems** Chair: Cynthia Rosenzweig Manuel Otero, *IICA* Hayden Montgomery, *Global Methane Hub (virtual)* Barron Orr, *UNCCD* Kevin Pixley, *CIMMYT*	
10:30-11:00	**Report Back from March 31 Side Meetings**	
11:00-11:30	Coffee Break & Posters	KMIT Lobby
11:30-13:00	**AgMIP Team Working Sessions** *What are main AgMIP activities in this area?* *How can new participants get involved?* *What are plans and priorities for the next year?*	
	WS1: Landscape-scale modeling & crop loss *Chairs: Frank Ewert and Diego Pequeno*	KM10
	WS2: Crop model improvement *Chair: Montse Salmeron*	KM11A&B
	WS3: Machine learning and data assimilation *Chair: Ioannis Athanasiadis*	VC09
	WS4: Economics and trade modeling in a changing food system *Chair: Dominique van der Mensbrugghe*	KMIT Open Area
13:00-14:30	Lunch *(Theme: Region)*	Guest House Garden
14:30-15:30	**Session 2 Plenary: Technology Across Scales** Chair: Christoph Müller Geraldo Martha, *EMBRAPA (Keynote)* Daniel Mason-D'Croz, *Cornell University* Frank Ewert, *ZALF* Ioannis Athanasiadis, *WUR* Sarah Garland, *TripleHelix (virtual)*	KMIT Auditorium

APPENDIX 1: AGENDA

Day 1: Tuesday, April 1, 2025 (cont.)		3
Time	**Session**	**Location**
15:30-16:00	Coffee Break & Posters	KMIT Lobby
16:00-17:30	**Paper Presentation Sessions** *What are the latest research results and key findings for applications?* *Presentation details*	
	PS1: Regional integrated assessments of risk and adaptation options *Chair: Roberto Valdivia*	KM10
	PS2: Improving crop models to capture seasonal climate responses *Chair: Kevin Karl*	KM11A&B
	PS3: Data assimilation and remote sensing *Chair: Jyoti Singh*	KMIT Open Area
	PS4: Modeling mitigation and soils *Chair: Pierre Martre*	VC09
18:00-20:00	***Evening Reception*** ***Speaker:*** Purvi Mehta, *Gates Foundation*	Guest House Garden
Day 2: Wednesday, April 2, 2025		
08:20-09:00	**Arrival & Registration** *Light breakfast provided*	KMIT Lobby
09:00-10:15	**Session 3 Plenary:** **Model Application in Low-Yielding/Low-Data Environments** Co-Chairs: Anthony Whitbread and Dilys MacCarthy Gatien Falconnier, *CIRAD (Keynote)* Jacob Emanuel Joseph, *ILRI* Diego Pequeno, *CIMMYT* Nataraja Subash, *ICAR*	KMIT Auditorium
10:15-10:30	**Report Back from Day 1 Working Sessions**	
10:30-11:30	Group Photo, Coffee Break & Posters	KMIT Lobby
11:30-13:00	**Paper Presentation Sessions** *What are the latest research results and key findings for applications?* *Presentation details*	
	PS5: Food systems, trade, and diets in a changing world *Chair: Mario Herrero*	KM10
	PS6: Data and information technologies advances for agricultural modeling *Chair: Monique Oliveira*	KM11A&B

APPENDIX 1: AGENDA

Day 2: Wednesday, April 2, 2025 (cont.) 4		
Time	**Session**	**Location**
11:30-13:00	**Paper Presentation Sessions (cont.)** *What are the latest research results and key findings for applications?* *Presentation details*	
	PS7: Modeling dryland and other non-traditional/opportunity crops *Chair: Nataraja Subash*	KMIT Open Area
	PS8: Land, water, and climate modeling *Chair: Sonali McDermid*	VC09
13:00-14:30	Lunch *(Theme: Gender)*	Guest House Garden
14:30-16:00	**AgMIP Team Working Sessions** *What are main AgMIP activities in this area?* *How can new participants get involved?* *What are plans and priorities for the next year?*	
	WS5: Regional assessment for adaptation and mitigation policy planning *Co-Chairs: Ashfaq Chatta and Roberto Valdivia*	KM10
	WS6: Simulating opportunity crops & Low-input agricultural systems *Co-Chairs: Marc Corbeels, Antoine Couedel, and Dilys MacCarthy*	KM11A&B
	WS7: Calibration, model, and modeler uncertainty *Co-Chairs: Daniel Wallach and Christoph Müller*	KMIT Open Area
	WS8: Modeling food system mitigation *Co-Chairs: Yushu Xia and Daniel Mason-D'Croz*	VC09
16:00-16:30	Coffee Break & Posters	KMIT Lobby
16:30-17:30	**Session 4 Plenary: Crop and Livestock Modeling** Co-Chairs: Frank Ewert and Montse Salmeron Heidi Webber, *ZALF (Keynote)* Santiago Cuadra, *EMBRAPA* Jonas Jägermeyr, *Columbia University* Randall Boone, *Colorado State University (virtual)*	KMIT Auditorium
Day 3: Thursday, April 3, 2025		
08:00-08:30	**Arrival & Registration** *Light breakfast provided*	KMIT Lobby
08:30-09:00	**AgMIP Feedback Drop-In** *Discuss AgMIP Community feedback received at AgMIP Coordination poster* Chairs: AgMIP Executive Committee	KMIT Auditorium

APPENDIX 1: AGENDA

Day 3: Thursday, April 3, 2025 (cont.)		5
Time	**Session**	**Location**
09:00-09:30	**AgMIP and EAT-Lancet Plenary** Chair: Laure Tall Mario Herrero, *Cornell University (Keynote)*	KMIT Auditorium
09:30-10:30	**Session 5 Plenary:** **Climate Resilience for Food and Nutrition Security** Co-Chairs: Laure Tall and Mario Herrero Tafadzwanashe Mabhaudhi, *LSHTM (Keynote)* Vimbayi Chimonyo, *CIMMYT* Pierre Martre, *INRAE* Kevin Karl, *Columbia University*	
10:30-10:45	**Report Back from Day 2 Working Sessions**	
10:45-11:00	Coffee Break & Posters	KMIT Lobby
11:00-12:30	**Paper Presentation Sessions** *What are the latest research results and key findings for applications?* *Presentation details*	
	PS9: Landscape-scale modeling and Crop losses *Co-Chairs: José M. Fernandes and Diego Pequeno*	VC09
	PS10: Developing crop and livestock model products for practical application *Chair: Ken Boote*	KM11A&B
	PS11: Science of calibration, configuration, and ensembles *Chair: Daniel Wallach*	KM10
	PS12: Projections of future crop productivity *Co-Chairs: Chenzhi Wang and Xuhui Wang*	KMIT Auditorium
	PS13: Food systems, nutrients, and health *Chair: Nathaniel Springer*	KMIT Open Area
12:30-14:00	Lunch *(Theme: Career Stages)*	Guest House Garden
14:00-15:00	**Session 6 Plenary:** **Mitigation and Adaptation Co-Benefits and Life Cycle Analysis** Chair: Hermann Lotze-Campen Sonali McDermid, *NYU (Keynote)* Yushu Xia, *Columbia University* Tek Sapkota, *CIMMYT* Pablo Manzano, *Basque Centre for Climate Change (virtual)*	KMIT Auditorium
15:00-15:30	Coffee Break & Posters	KMIT Lobby

APPENDIX 1: AGENDA

Day 3: Thursday, April 3, 2025 (cont.)		6
Time	**Session**	**Location**
15:30-17:00	**Radical Collaboration Sessions** *What challenges need new partnerships in this area?* *How can we overcome barriers to progress?* *What new AgMIP activities are needed to enable progress?*	
	RCS1: Planetary boundaries, biodiversity, and water quality on agricultural landscapes *Co-Chairs: Tafadzwa Mabhaudhi and Kevin Karl*	VC09
	RCS2: Known unknowns in crop impact projections *Chair: Rogério de Souza Nóia Júnior and Ignacio Pérez Domínguez*	KM11A&B
	RCS3: Agricultural adaptation and mitigation pathways and limitations *Co-Chairs: Florian Zabel and Jonas Jägermeyr*	KM10
	RCS4: Models as a tool for crop breeding *Co-Chairs: Matthew Reynolds and Wei Xiong*	KMIT Open Area
17:00-17:30	**Final Plenary Wrap-up** *Report Back from Radical Collaboration Sessions* *Reflections, Closing Remarks, and Way Forward*	KMIT Auditorium

Friday, April 4, 2025: Side Meetings *If you would like to attend a meeting, please contact the session Leader(s) for more information.*			
Time	**Session**	**Leader Contact Info**	**Room**
08:30-09:00	**Arrival** *Light breakfast provided*		KMIT Lobby
09:00-12:00	Modeling Territorial Socio-Ecosystems	v.chimonyo@cgiar.org	KM11A
	AgMIP Soybean	msalmeron@uky.edu	KM10
	Food System Emissions	kevin.karl@columbia.edu	VC09
	Rice Modeling for Mitigation and Adaptation	erik.mencos@columbia.edu	KM11B
	Impacts and Attribution of Excessive Rainfall and Drought: Maize Yield in Low-Input Smallholder Systems	gatien.falconnier@cirad.fr	N/A (Closed)

The AgMIP10 workshop agenda is subject to change.

AgMIP10
Responding to Climate Change Urgency

APPENDIX 2: PARTICIPANTS

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APPENDIX 3: ABSTRACTS, PRESENTATIONS, AND REPORT BACKS

Paper Presentation Abstracts: link

Paper Presentation Slides:

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PS12
PS13

Poster Presentation Abstracts: link

Side Meeting Descriptions: link

Plenary Videos:

AgMIP10 Kick-Off Plenary & Science-Policy Linkages for Food Systems
Technology Across Scales
Model Application in Low-Yielding/Low-Data Environments
Crop and Livestock Modeling
AgMIP and EAT-Lancet Plenary & Climate Resilience for Food and Nutrition Security
Mitigation and Adaptation Co-Benefits and Life Cycle Analysis &
Final Plenary Wrap-Up

AgMIP10

Responding to Climate Change Urgency

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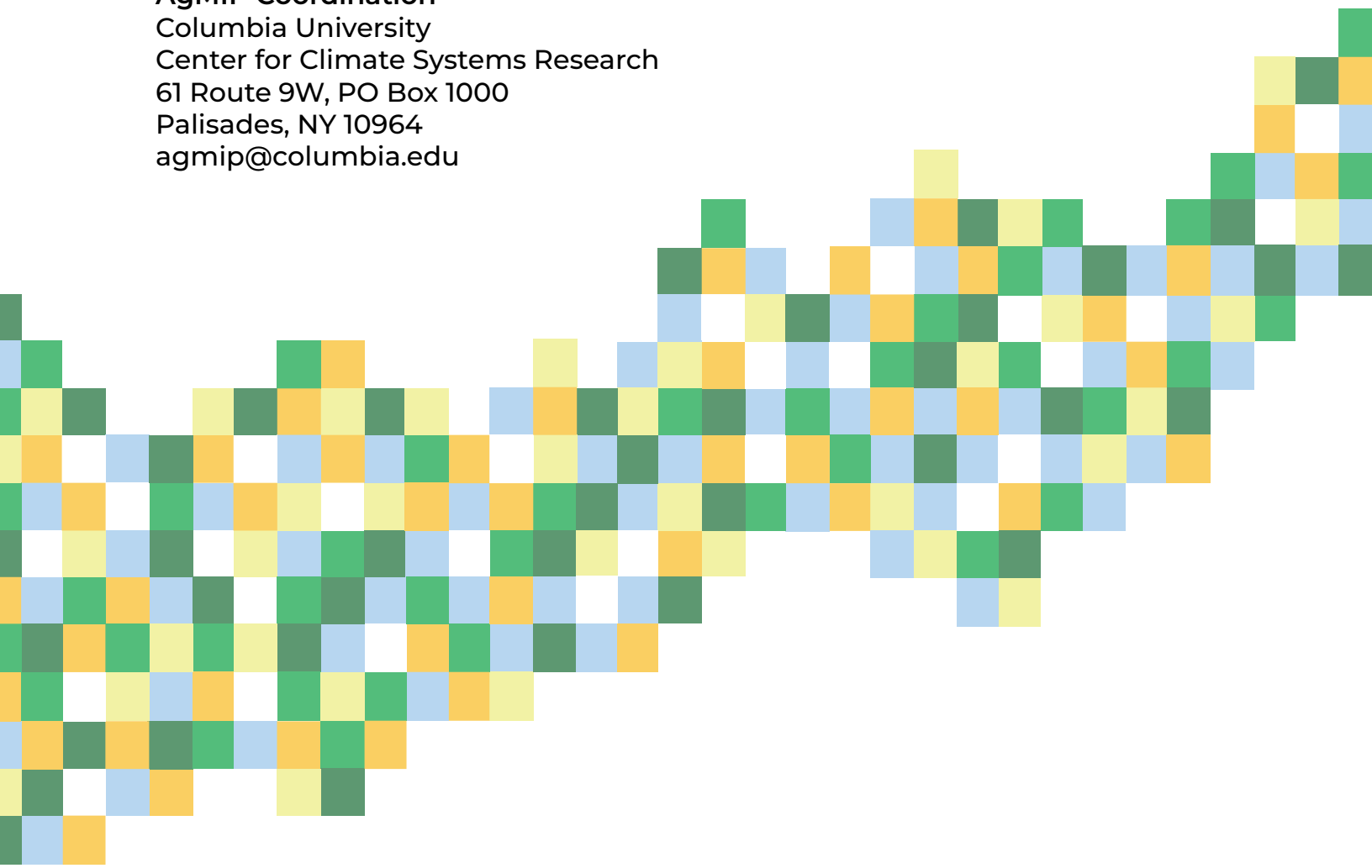

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Cornell University

PIK
Potsdam Institute for Climate Impact Research

Technische Universität München

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World Food Prize Fund