

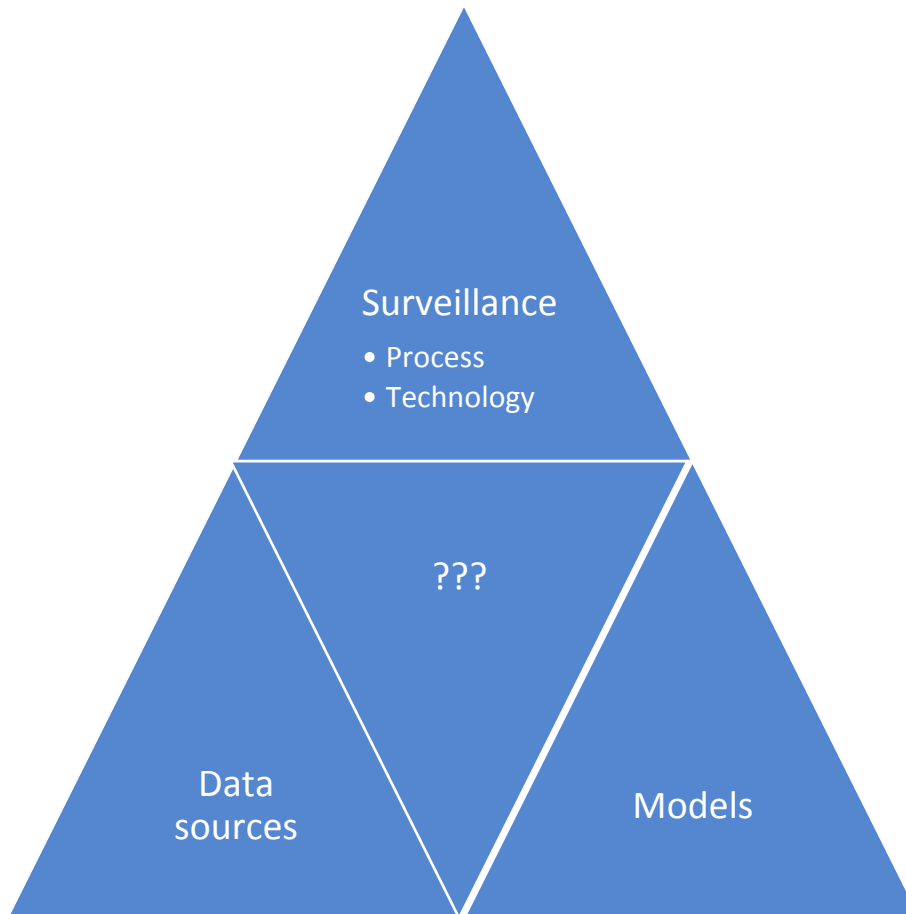
Cross-cutting issues: Data sources; modeling approaches; diagnostic tools

Scenario groups

- Temperate cereal systems
 - Tropical maize-based systems
 - Aquaculture systems
- What climate variables matter most for each system? What is happening or anticipated? How predictable? Be specific – where/what...
 - What P&D challenges are affected by these climate trends? Risk/vulnerabilities – where? Equity?
 - How can we redesign systems to make them less vulnerable and more sustainable (env, soc, econ)?
 - Constraints and opportunities → what can happen and how? Credible pathways? Political/cultural/consumer/etc.
 - What do we need to know? Data sources? Emerging P&D; surveillance needs?
 - Products to be developed – paper, projects, ...??? Audiences of interest

Orthogonal groups

- **Data sources and models:** obvious + neglected; crowdsourcing; incentives for sharing (extraction not popular); various types; apps; remote sensing
- **Surveillance** ideas: nucleic acids; metabolites; remote sensing; apps; Participation – role of people?
- **P&D adaptation and evolution:** durable resistance; deployment; pest adaptation
- **Diversity** and its complications – system re-design; opportunities and constraints



1) Reviews / Meta-analyses/research papers

- Warm winter effects on weeds-pests-pathogens (temperate ag) (Dave, Kimberly)
- Dryland cereal systems; yield gap, specific regions where data exist, role of climate/P-P (**Sanford, Adam**, Sridhar)
- Impact of drought/dry years on pests/pathogens in E. Africa, seasonal rainfall (ENSO hind-test) (Kimberly, Rebecca, David, Dave H, Sunday, Michael, MaryLucy, Pamela)
- Climate impacts on pests/pathogens in aquaculture (**Dane**, Roz, Fernando)
- Weed dynamics in response to growing degree days: Maps of weed distribution (hind-cast, forecast) (Andrew K., Michelle, Sanford, David)
- Comparative analysis: SSA/tropics, temperate (cereal sys), aquaculture (**Sunday**, Roz ALL)
- Which categories of climate data/info/projections are reliable? Which ones should be avoided? Where has it been mis-used? (David)

2) Perspectives and Proposals— call to action, plan for institutional/policy change

- Creating an open platform for data sharing on ag weeds-P-P; combining models and data
 - **Dan B.**, Dave, Andy N., Zia, Adam, Karen, Julian (FILL)
- Smart Surveillance Under Climate Change: What's working and what's not? What is needed for the surveillance of emerging P-P? Surveillance of exposure: bring in open data platform, evolution ideas (**Karen**, Dave, Dan, Fernando, MaryLucy, Michelle, Dave, Adam, Dane, Andy, Rebecca)
- Evolution of ag weeds P-P in a changing climate (**Andrew K**, Adrian, Pam, Bruce and others not at workshop)
- Trans-boundary effects of P-P (Dave)
- Integrating different ways of understanding climate impacts on P-P-weed dynamics (Michelle)
- Diversification pathways for min ag weeds-P-P: Genetic varieties, IPM – (vs chemicals) How diverse? What are the function attributes? What's the direction? How to diversify strategies, temp/spatial (eg, host plant resist with other methods); mitigating risk with diff'n strategies; policy/economic opportunities and limitations

Calendar mapping