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## Participatory Modeling for Development: Finding Common Ground Between Farmers and Science

**PATRICIA MASIKATI AND ANDRE VAN ROOYEN**

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

[p.masikate@cgiar.org](mailto:p.masikate@cgiar.org)

**Session: Basin (Limpopo) and Spatial Analysis and Modeling**

### Key Message

This presentation will illustrate how we include farmers as decision makers in evaluating potential interventions in crop-livestock intensification. Farmers interact with scientists and the models to (i) learn through active participation in scenario development and evaluation, (ii) create an environment where farmers can conduct *ex-ante* analyses on their own input decisions and management options available, (iii) play what-if games based on previous production figures and known management practices.

## Summary

The complex nature of crop-livestock systems means that there are many entry points for interventions and a wide range of technologies and strategies on offer. This, coupled with the diverse nature of farmers' abilities, knowledge and willingness to invest, makes management recommendations complicated and technology adoption rates low.

Computer-based simulation modeling offers scientists and farmers an excellent tool to evaluate the impact of interventions. While simulation has been used successfully by science it is hardly ever available to the farmer. This presentation describes the process in which we familiarize farmers with the idea of simulation to aid decision-making. Confidence in the process is built by first simulating previous crop production based on farmers' experiences. Playing what-if games illustrates the effectiveness of

interventions or combinations of interventions in certain conditions. Further simulations using farmers' input and management options (input potential, labor for weeding etc.) are then used to define specific crop production options to be tested in the following season.

The process allows farmers to determine the impact of their decisions, evaluate new options and define realistic production and management options tailored to their particular circumstances. In turn, scientists learn more about the farmers' decision-making process, input and managerial potentials as well as knowledge gaps.