INTER-AMERICAN INSTITUTE FOR GLOBAL CHANGE RESEARCH

Decision support system (DSS) for risk reduction in agriculture phase II: soybean DSS for Eastern Paraguay and Rio Grande do Sul (SGP-HD014)

Climate variability, particularly lack or excess of rainfall, is a major agricultural production risk. The El Niño Southern Oscillation (ENSO) is the strongest known driver of interannual climate variability. ENSO phases are characterized by sea surface temperature anomalies in the eastern equatorial Pacific Ocean. When sea surface temperature is higher than normal the phenomenon is referred to as El Niño, whereas La Niña has lower than normal temperatures. El Niño causes excess precipitation in subtropical southeastern south America, La Niña reduces precipitation in southern brazil and eastern Paraguay and central Argentina.

Goals

- Reduce production risks associated with climate variability

Results

- Producers in Paraguay and Brazil were introduced to the use of seasonal climate forecasts.
- A crop growth model was used to evaluate adaptive management options (e.g.; planting different soybean varieties, varying the planting dates) under different ENSO scenarios. Strategies for communicating risks were developed, including a web-based climate information system. Soybean producers in Brazil and Paraguay were very interested in understanding climate variability effects on their crop yields, and volunteered to co-develop a decision support system available on the Internet.
- Research in eastern Paraguay and southern Brazil demonstrated that the challenge of providing farmers with trustable, useful, science-based information, which they in turn can use to make informed decisions, can be best met by developing and implementing climate-based decision support systems in close cooperation with local cooperatives. The project uses a probabilistic approach, rather than looking for a clear-cut, "yes-or-no" responses to climate forecasts. The project received strong support from growers; three cooperatives have committed funds for the purchase of weather stations to provide weather information to their growers.
- Decision support tools for yield and climate risks were adapted for Paraguay (http://py.agroclimate.org/) and will soon be available for Rio Grande do Sul in Brazil (http://.br.agroclimate.org/).

Soybean planted using no-till management practices in Rio Grande do Sul, Brazil

Grain crops production field in Rio Grande do Sul, Brazil

Julian Baez talking to the members of the Camara Paraguaya de Exportadores de Cereales y Oleaginosas (CAPECO), Paraguay

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Links to other IAI projects

Contribution to the Collaborative Research Network project on **land use change in the Rio de La Plata Basin: linking biophysical and human factors to understand trends, assess impacts and support viable strategies for the future** (see **CRN2031**).

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