Climate-Smart Agriculture in Sinaloa, Mexico

Supplementary material

This publication is a product of the collaborative effort between the International Center for Tropical Agriculture (CIAT), the lead Center of the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS); the Tropical Agricultural Research and Higher Education Center (CATIE); and the World Bank to identify country-specific baselines on CSA in seven countries in Latin America: Argentina, Colombia, Costa Rica, El Salvador, Grenada, Mexico, and Peru. The document was prepared under the co-leadership of Andrew Jarvis and Caitlin Corner-Dolloff (CIAT), Claudia Bouroncle (CATIE) and Svetlana Edmeades and Ana Bucher (World Bank). The main authors of this profile are Beatriz Zavariz-Romero (CIAT) and Chelsea Cervantes De Blois (CIAT), and the team was comprised of Andreea Nowak (CIAT), Miguel Lizarazo (CIAT), Pablo Imbach (CATIE), Andrew Halliday (CATIE), Rauf Prasodjo (CIAT), María Baca (CIAT), Claudia Medellín
(CATIE), Karolina Argote (CIAT), Juan Carlos Zamora (CATIE), and Bastiaan Louman (CATIE).

The supplementary material should be cited as:
World Bank; CIAT; CATIE. 2014. Supplemental material for Climate-Smart Agriculture in Chiapas, Mexico. CSA Country Profiles for Latin America Series. Washington D.C.: The World Bank Group.

Special thanks to the institutions that provided information for this study: SAGARPA, CIMMYT, FIRCO, INIFAP, COFUPRO, FIRA, SMN, INECC and CONABIO.
This profile has benefited from comments received from World Bank colleagues: Willem Janssen, Marc Sadler, and Eija Pehu.

Contents

This Supplementary Material is in support of the Climate-Smart Agriculture in Sinaloa, Mexico profile within the Country Profiles for Latin America Series. The annexes below are references where relevant in the text. The Supplementary Material cannot and should not be read in isolation. It can only be read in association with the chapter.

Annex I: *Acronyms*

AGROECO	*AGROECO consulting company*
SAGARPA	*Secretary of Agriculture, Livestock, Fisheries and Rural Development*
CONANP	*National Commission of Natural Protected Areas*
CIMMYT	*International Center for Maize and Wheat Improvement*
CONABIO	*National Biodiversity Commission*
SEMARNAT	*Secretary of the Environment and Natural Resources*
CONAFOR	*National Forest Commission*
CONAGUA	*National Water Commission*
FIRA	*Trust funds for Rural Development*
CAADES	*Confederation of Agricultural Associations of the State of Sinaloa*
AARFS	*Agriculture Association of Rio Fuerte*
ESAVF	*Superior Agriculture School of the Rio Fuerte Valley*
SACSA	*Coastal Agriculture Services*
CODESIN	*Council for the Development of Sinaloa*
SEDESHU	*Secretary for Human Development*
INAPI	*Institution for the Support of Research and Innovation*
UAS	*Autonomous University of Sinaloa*
SAGYP	*Secretary of Agriculture Livestock and Fisheries*

Annex II: *Production systems selection*

Production system selections were made according to the products' contribution to economic development and harvested area. Environmental impact and interviewees' comments were also taken into account. In detail, the methodology consisted of 2 main steps: 1) Identifying agricultural products that occupy the largest harvested area in the country; and 2) identifying agricultural products with the highest value of production. A ranking score from 5 to 1 was given to the top products on each list. Then the rankings were averaged to compute an average top 5 ranking.

Products with high harvested area and high value of production, but not directly intended for human consumption (e.g. sorghum) were eliminated from the list. Milk and cattle meat, as animal products, were added to the list due to three considerations: 1) they complement the top list of crop products with animal production systems; 2) milk contributes to 169.6 average daily kcal consumption per capita (FAO, 2013); and 3) livestock GHG emissions from pasture, land use change, and enteric fermentation contribute to half of all agricultural GHG emissions in Mexico.

Interviewees did not note livestock products as a significant food system in the state. Instead, cucumber was suggested to be included on the list due to its high value of production.

Annex III: *Ongoing CSA practices*

As shown in the figure below, some agricultural practices implemented in Sinaloa have a high climate smartness rating but low adoption rate: drip irrigation and Conservation Agriculture for tomato are examples of such practices that have high potential for future impact. In addition to on-farm practices, institutional and programmatic support is needed to scale up CSA, including meteorological early warning systems, farmer networks, strengthened agricultural extension, index-based insurance schemes, financial incentives, property rights, and payment for ecosystem services, among others.