

Policy changes needed to protect southeast Mexico's farmers, forests

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Farmers prepare land for corn by burning. In the background is a patch of plantains. Photo by Rinku Roy Chowdhury

(PhysOrg.com) -- If it is to ensure a bright future for Campeche farmers and the tropical forests surrounding them, the Mexican government must institute new policies that are more responsive to economic and ecological realities, an Indiana University Bloomington geographer argues.

In a recent issue of the [Proceedings of the National Academy of Sciences](#), Rinku Roy Chowdhury identifies three "clusters" of southern

Campeche [farmers](#) based on their land use activities. For the most part, this diversity is not addressed directly or indirectly by Mexico's laws or policies in the region, calling into question whether those policies are effective.

"I have been working for several years to understand environmental and human activities in the southern part of Mexico's Yucatan Peninsula," said Roy Chowdhury, who specializes in land change science. "This area is home to numerous agricultural communities and to the largest remaining stretch of Mayan [forest](#) and Mexico's largest forest reserve."

The protected area was established in 1989 and designated a "[biosphere reserve](#)" by UNESCO in 1992. More than 500 sites have received the designation because they are culturally important centers of conservation and sustainable development. Calakmul, an important Mayan city, is part of the reserve and its expansive ruins were named a [UNESCO World Heritage Site](#) in 2002.

Roy Chowdhury found that area farmers could be subdivided into three statistical groups based on the farmers' economic behavior on their parcels, specifically, how they combine large or small areas in diverse land uses, including subsistence (corn) and market (jalapeño pepper) crops, pasture, and conservation lands. These combinations in turn were tied to farmer attributes and the degree to which they received assistance from the government.

The first cluster of farmers Roy Chowdhury calls the "farmer-conservationists." They form the smallest group, tend to farm large areas primarily for subsistence, but have also adopted a number of conservationist land use practices. The farmers are usually part of families that have farmed the area for many years, have relatively large land parcels, and rarely work odd jobs during the off-season. They benefited strongly from farm support programs as well as conservation

subsidies, and were experienced participants in regional environmental projects and networks.

The second group consists of "extensive-intensive farmers." They farm moderate to large land areas for subsistence, but also for market-bound crops. Farmers in cluster 2 also use a significant portion of their land as animal pasture, which degrades the land and is not sustainable in this region. These farmers owned large land parcels, benefited primarily from farm support rather than conservation programs, and like cluster 1, work few odd jobs during the off-season.

Most farming households belonged to a third group, the "non-extensive diversified land users." These farmers had smaller land parcels and diverse but small land use investments, received the smallest government supplements for farming or for conservation, and most significantly, Roy Chowdhury says, worked in diverse off-farm jobs at some point during the year to supplement their incomes.

Even though most households belong to cluster 3, Roy Chowdhury says land use impacts aren't evenly distributed across the three clusters.

"Most households are deforesting less and working more off-farm," Roy Chowdhury said. "But forest recovery across the broad region remains debatable because the less common household strategies -- especially group 2 -- have disproportionate impacts."

To improve conservation and economic opportunities for Campeche farmers, Roy Chowdhury says the Mexican government would need to find a way to discourage non-sustainable land use practices among cluster 2 farmers while also facilitating the burgeoning off-farm work opportunities that provide secondary income, and perhaps leveraging cluster 1 farmers' conservation experience.

"Conservation-economic development policies in the region need to accommodate diverse small landholder farming rationales, increase off-farm opportunities, such as tourism, and target sustainable development with the assistance of community conservation leaders," Roy Chowdhury said. "It would be best if the government built in flexibility to its policies, to account for the incredible diversity of economic strategies we observe among the farmers."

The Mexican government has long taken an interest in supporting its farmers. In past years, the federal government offered price supports to farmers who grew corn and other strategic crops. Anything the farmers produced beyond what they needed for subsistence could be sold at government centers. The government thus created a food reserve, and the guaranteed minimum price provided some livelihood security to the farmers.

In the 1990s, the passage of the North American Free Trade Agreement (NAFTA) forced an end to price supports. Worried that poverty and landlessness might lead to social unrest or even insurrection, the Mexican government erected a stop-gap measure by which farmers receive some financial support in proportion to the active farmland they held. In English the measure is called the Program of Direct Support to the Field, and is usually referred to in abbreviated Spanish as PROCAMPO.

The program is generally considered a success in Mexico's main agricultural areas to the north, but that does not mean it has been good for the majority of Campeche's farmers or forests. Most of the farmers Roy Chowdhury surveyed belong to cluster 3, after all, not cluster 2, and therefore do not receive much support from the central government.

"PROCAMPO is an interesting approach," Roy Chowdhury said. "But for the farmers in Campeche, the strategy is not quite right, and hardly

adequate given the difficult market conditions and resource constraints they typically face. On the other hand, conservation subsidies are no recipes for forest protection if they ignore farmer diversity and strategies."

Economic changes are already afoot in Campeche, Roy Chowdhury says. More and more farmers are seeking work off-farm -- in towns and cities -- and this may signal a regional population shift from rural to urban areas. Such a shift may not ensure income stability for all, especially in the short term. In the end, however, it may benefit some farmers, as well as those who hope to conserve the area's natural and cultural heritage, unless the farmers that remain continue to have disproportionately large deforestation impacts, such as Group 2.

"The geology of the area is not ideal for farming," Roy Chowdhury said. "Drainage tends to be quite poor. It is similar to Indiana in some ways. You don't have to go very deep before you hit limestone."

More information: "Differentiation and concordance in smallholder land use strategies in southern Mexico's conservation frontier," by Rinku Roy Chowdhury, Proceedings of the National Academy of Sciences, v. 107 no. 13 5780-5785

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