Perspective

Latin American oil palm follows an unfamiliar route to avoid deforestation

Navin Ramankutty1,3 and Jordan Graesser2

1 Liu Institute for Global Issues and Institute for Resources, Environment, and Sustainability, University of British Columbia, Vancouver, BC, V6T 1Z2, Canada
2 The Department of Earth and Environment, Boston University, Boston, MA 02215, United States of America
3 Author to whom any correspondence should be addressed.

E-mail: navin.ramankutty@ubc.ca

The rapid expansion of commodity crops, such as soy, coffee, rubber, and oil palm, has been of increasing environmental concern (Meyfroidt et al 2014). Oil palm, in particular, has gained notoriety as the cause of rapid deforestation in Southeast Asia (Carlson et al 2012). International campaigners have called for global boycotts of palm oil, which is ubiquitous in many household products and foodstuffs. But demand for palm oil is rising around the world—global production doubled over just the last decade.

Furumo and Aide (2017) have conducted one of the few large-scale studies linking deforestation to a particular crop—oil palm. And further, they have performed the first large-scale assessment of oil palm expansion in Latin America and the Caribbean (LAC), whereas most attention to date on oil palm expansion has occurred in Southeast Asia. Their study used their previously developed Land Mapper software to classify oil palm at 250 m spatial resolution using MODIS satellite imagery. After performing accuracy assessment and removing false positives, they then used the most recent Google Earth high-resolution imagery to identify prior land uses.

Furumo and Aide (2017) found that most oil palm expansion in LAC occurred onto grazed land (figure 1), contrary to what has been found in Southeast Asia, despite the LAC countries they studied being 'forestless' nations. In particular, they estimated that 79% of oil palm plantations came from 'previously intervened' land. They suggest that cattle ranching and infrastructure development are important precursors for oil palm and other commodity crops in LAC. This finding is consistent with the predictions of bid rent theory, and the hypothesis of Meyfroidt et al (2014) that 'Use of already-cleared lands is favored when commodity crops require access to infrastructure.'

There were, however, important variations in this overall result. Peru (particularly in the Loreto region), the Brazilian state of Pará, and the Petén region of Guatemala witnessed the greatest amount of forest loss for oil palm. Furumo and Aide (2017) provide an interesting explanation, that industrial-scale operations were chiefly responsible as they have the resources necessary to access remote areas. Indeed, they mapped industrial-scale plantations in both Peru and Guatemala in areas where oil palm encroached onto forests. This result underscores the need to identify the actors of deforestation in order to understand the land use dynamics.

Furumo and Aide (2017) further analyzed trade data to understand the main drivers and suggest that oil palm production is mainly meeting domestic demand, contrary to the typical narrative of south-north commodity flows. In fact, 70% of palm oil exports stayed within LAC, with Mexico being the largest importer. Biofuel initiatives seem to be the major driver of this domestic demand.

The authors acknowledge that limitations of their methods may have resulted in misidentification of the land uses immediately preceding oil palm due to lack of image acquisitions close to the oil palm transition dates (for example, while they sometimes identify forest as the preceding land use, the real transition may have been forest to grazing to oil palm). But another potential misidentification may result from not fully capturing post-transition land use dynamics. For
example, while Furumo and Aide conclude that oil palm has not resulted in forest clearing, one could imagine a scenario where oil palm is replacing grazing land in the studied areas, but grazing land is being displaced to remote areas and causing deforestation elsewhere. Such ‘displacement deforestation’ has previously been suggested for soy expansion in Brazil (Arima et al 2011). Thus, to fully understand the role of oil palm in land use change, one needs to pay attention to preceding land uses but also to the full land use dynamics following the transition.

Given the major landscape transformation witnessed by LAC due to another commodity crop, soy (Gibbs et al 2015), a future scenario of increased oil palm expansion that the authors discuss is potentially alarming. As things stand, the oil palm sector in LAC is not facing as much scrutiny as Southeast Asia. But Furumo and Aide (2017) portray a more optimistic picture for LAC. First, despite the fact that much of the oil palm produced in LAC is traded within the region, there seems to be a growing movement toward certification in order to attract international markets. The authors report that membership and certified areas are increasing rapidly and nearly 20% of LAC oil palm is certified (comparable to the global average). But given the strong regional market, the inclusion of regional companies and users of oil palm as well as government policies are likely to be more effective than a pure focus on international export markets. Second, given the finding that only 21% of existing oil palm has encroached onto forests, the authors remain optimistic that LAC can trace a different trajectory than Southeast Asia in the quest for sustainable oil palm production.

In the past two decades, LAC witnessed rapid expansion of flex crops, particularly soy, sugarcane, and now oil palm. Often, land change studies capture important changes after the major transformations have occurred. But the timely study of Furumo and Aide (2017) offers valuable insights on the key patterns and drivers of oil palm expansion at a fairly early stage in LAC. These insights will help support policy efforts to reduce deforestation in LAC.

References
Arima E Y, Richards P, Walker R and Caldas M M 2011 Statistical confirmation of indirect land use change in the Brazilian Amazon Environ. Res. Lett. 6 024010
Carlson K M, Curran I M, Ratnasari D, Pittman A M, Soares-Filho B S, Asner G P, Trigg S N, Gaveau D A, Lawrence D and Rodrigues H O 2012 Committed carbon emissions, deforestation, and community land conversion from oil palm plantation expansion in West Kalimantan, Indonesia Proc. Natl Acad. Sci. 109 7559–64
Furumo P R and Aide T M 2017 Characterizing commercial oil palm expansion in Latin America: land use change and trade Environ. Res. Lett. 12 024008
Gibbs H K, Rausch L, Munger J, Schelly L, Morton D C, Noojipady P, Soares-Filho B, Barreto P, Mascot L and Walker N F 2015 Brazil’s soy moratorium Science 347 377–8
Hansen M C. et al 2013 High-resolution global maps of 21st-century forest cover change Science 342 850–3
Meyfroidt P et al 2014 Multiple pathways of commodity crop expansion in tropical forest landscapes Environ. Res. Lett. 9 074012

Figure 1. Share of land uses preceding oil palm cultivation in LAC.