


COMMENT AND REPLY

An informed response to Kloppenburg et al. (2024) — Nagoya Protocol

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Comment on Kloppenburg, J, Calderón, CI, Ané, J-M. 2024. The Nagoya Protocol and nitrogen-fixing maize: Close encounters between Indigenous Oaxacans and the men from Mars (Inc.). DOI: <https://doi.org/10.1525/elementa.2023.00115>

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We read with anticipation the comprehensive analysis of one of the few case studies on access and benefit sharing (ABS) via the Nagoya Protocol. We agree that neither the Nagoya Protocol agreement on maize, nor the Nagoya Protocol itself, are perfect and warrant open discussion. As previous collaborators and coauthors on a nitrogen fixation study (Van Deynze et al., 2018), we would have been happy to provide input, had the authors of this work asked. To note, only Howard-Yana Shapiro was briefly interviewed on the topic, and none of the coauthors were privileged to the agreement, unlike the authors from Kloppenburg et al. (2024). First, one must acknowledge that this was the first and only such agreement attempted with Mexico or the United States with the intention to do the right thing regarding access to indigenous genetic resources. The idea of access and benefit sharing has been discussed for 20 years since the Cartagena Protocol on Biosafety was put into effect in 2003, yet guidelines had not been practically tested.

There is no right answer as to which community, state, or country should receive benefit sharing and how much or in what form, in exchange for access to the maize genetic resources. Had the current authors consulted their collaborators, including those on this letter, they would have learned that we worked with many communities in the region since 2004 but it was only Totontepec, as a community, that was genuinely interested in advancing the scientific research by providing access to resources and technical expertise as noted in acknowledgments of Van Deynze et al. (2018). Several members of the community were employed and directly participated in the research while being trained not only in field experimentation but in molecular techniques with a full lab on site. In addition, routine updates on research results were translated and presented in the local language to the community.

Furthermore, seed saving techniques and renewable resources were donated to the community (see Bradford et al., 2018). Unfortunately, the terms of the agreement negotiated by the Mexican government inherently limit the use of materials and the publication of scientific evidence that further and ultimately limited benefits directly to the community and to science broadly. Kloppenburg et al. (2024) authors would also have discovered that as a result of these Mexican government-imposed limitations, we no longer investigate this valuable source of maize since 2021, the decision not influenced by Kloppenburg et al.

Prior to this publication, Jean-Michel Ané from the University of Wisconsin team received 3 grants totaling \$1.12 million to work on Totontepec maize, casting doubts on the claim by Kloppenburg et al. that they are following a noble path by using a different instrument for access and benefit sharing, the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Under the ITPGRFA (that Mexico has not signed), the authors would have paid \$50 for a seed packet of accessions that were collected prior to any ABS agreements, which goes to a central fund managed by the ITPGRFA. Although, perhaps more globally accepted, this treaty describes a vague target to fund development of plant genetic resources, importantly “in a transparent way” <https://www.fao.org/plant-treaty/areas-of-work/funding/en/>. We have yet to see how effective or fair and equitable it really is and whether it recognizes individual communities as the Nagoya Protocol agreement on maize has done. As noted in the publication, UC Davis contributed 50% of a substantial licensing payment to the Totontepec community and these funds were used to benefit the entire community in construction of a government building and offices. How many government buildings will be built or farmers’ sons and daughters will go to school from the ITPGRFA is yet to be seen. Again, community benefit from universal resources is a difficult goal. How do we protect the germplasm resources of the world, allow innovation

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and mobilization of these resources through plant breeding and variety development to feed the world, while recognizing the know-how and shepherding of these resources by local communities?

We must question the objectivity of the conclusions by the authors based on their activities prior to the agreements that they criticize in the publication. It seems that they are not above suspicion of unseemly activity based on the timeline of activities and participation to receive funding prior to agreements that they discuss. Perhaps they would benefit from a review of the principles of the scientific method (Rothchild, 2006). It is reasonable that they should question their own scientific integrity when they use speculation and lack of evidence as proof of biopiracy.

Competing interests

The authors have no competing interests with the Nagoya Protocol Agreement being discussed. Although Howard Shapiro was an employee of the corporation, Mars Inc. that holds the agreement at the time of signature, he had no direct involvement nor has he seen the agreement.

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