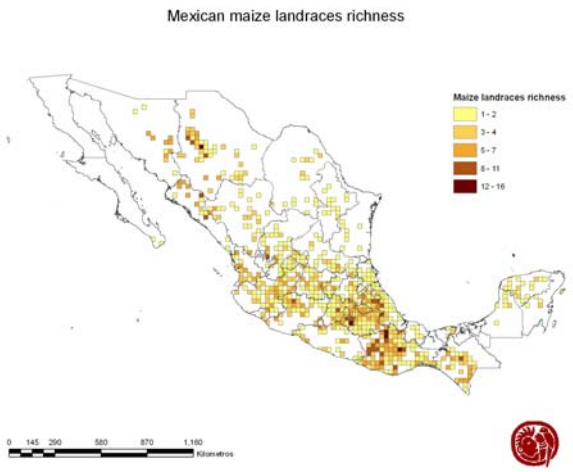
IDENTIFYING MAIZE DIVERSITY AREAS AND IMPLICATIONS REGARDING BIOSAFETY MEASURES. Francisca Acevedo*, José Sarukhán, Jorge Larson, Elleli Huerta, Patricia Koleff, Claudia Aguilar, Alejandra Barrios and Oswaldo Oliveros, National Commission for the Knowledge and Use of Biodiversity, CONABIO, Mexico City, Mexico and Ministry of the Environment and Natural Resources, Mexico City, Mexico.

In march 2005 Mexico approved the "Biosafety Law on Living Modified Organisms"(visit http://bch.cbd.int/database/record.shtml?id=8474) which among other things calls for a special regime to protect maize (article 2 fraction XI) and specifies the need to identify areas that are center of origin and current centers of genetic diversity for those species for which Mexico is center of origin and/or center of genetic diversity (articles 86 and 87), so as not to release GM related species in these areas.

Article 86 calls for the Ministries of Agriculture and Environment to arrange for "legal agreements" regarding these areas based on existing information coming from several governmental institutions, among those, the National Commission for the Knowledge and Use of Biodiversity (CONABIO, visit at www.conabio.gob.mx). In 2006 the Ministry of Agriculture asked CONABIO to provide the existing information on **maize and its related wild relatives** present in its biological databases. CONABIO generated a document called "General elements to determine the maize origin and genetic diversity centers, and the specific case of the experimental release into the environmental of transgenic maize in Mexico" (http://www.conabio.gob.mx/conocimiento/bioseguridad/doctos/Doc_CdeOCdeDG.pdf) which was sent to the two Ministers as information for the decision making process related to this particular issue.

This document includes distribution analysis both for maize landraces and teocintle species in a quadrant system of 0.5° x 0.5° (approximately 25 km per side) were landrace and species numbers present are enumerated. See maps that include all maize and teocintle information available to CONABIO through its biological databases.



It also includes four possible decision making scenarios related to spatial distribution, going from less to more conservative, the most conservative being a 32 km buffer around the quadrant according to *Luna et al.* 2001 as a safety area related to the maximum hypothetical linear distance of pollen flow. Article 86 calls for **current** genetic diversity areas, what this means is not clear. CONABIO decided that information coming from 1990 and onward would be considered current under its analysis, whilst only 20% of the data deposited in its biological databases fitted the criteria.

2007 North Central Weed Science Society Proceedings 62:66.

The document makes recommendations, one of them being to “integrate all the existing information in the country as well as to update it to reduce uncertainty in delimitating the areas the law calls for”. Taking this recommendation into account, the two ministries plus CIBIOGEM, a interministerial commission on biosafety (visit http://www.cibiogem.gob.mx) donated funds so as to accomplish the task asked for in this recommendation.

The key question is if delimitating these areas will be enough so as to make sure that maize landraces and/or teocintle species present in these areas will be “protected” from GMO related species if grown in Mexican territory. Probably not. Even though buffers were chosen to be the most “conservative” possible, no biosafety measures will be enough at a commercial scale as to counteract traditional seed exchange between the rural farmers which happens to be the single most important factor to ensure genetic diversity existing in the first place. The law in question on the other hand does not describe the components of the regime. Delimitating areas will certainly be a component but seed management and other cultural practices should be considered. This is why an exercise to map land use to reflect the distribution of agroindustrial production (indicated by the presence of irrigation agriculture) and traditional rainfed agriculture would be useful as well in such an analysis.

Although the analysis here presented focuses on maize, the fact is that GMO have been developed and trials are underway for other crops for which Mexico is center of origin and/or center of genetic diversity. If other genera are added to the analysis what would emerge are centers of diversity of genetic resources for food and agriculture. These areas, viewed as regions which contribute to *in situ* conservation of genetic resources could then be subject to specific policies that promote and protect this diversity.

References

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