

Main scientific findings from the CEC-commissioned studies and public symposium

“A clear set of conclusions emerge from the studies ... maize diversity is a global common good, of value not only to indigenous Mexican communities but to all of humanity; ...the scientific evidence shows that there is still a great deal that is not known about impacts at all levels; ...the likely source of most of the contamination was imported corn from the US. Controlling contamination is thus linked to controlling trade”¹

1. Contamination has happened.

Despite the massive international campaign against Ignacio Chapela and his research, the scientific studies commissioned by the CEC clearly acknowledge maize contamination in Oaxaca.

“The consensus at this stage is that transgenic sequences are present in Mexican maize landraces in the field.”²

2. The contamination is still happening and will spread if left unchecked.

Maize from the United States *“currently being brought by government programs as aid in food depressed areas is the most likely culprit of disseminating transgenic maize.”³* Farmer practices of saving and sharing seed are common and quite essential to the preservation of landrace diversity. Unfortunately these practices are also the main means by which contaminating transgenes will spread throughout traditional maize varieties.

Whether or not transgenes will remain in landraces depends on many variables, and the authors **do not** reach the conclusion that they will disappear on their own. Currently, scientists have little understanding of gene flow in maize and have no clear strategies for how to contain a transgene if it is found to be harmful to humans or the environment.⁴ *“... the introduction of transgenes into an open pollinated crop, and in particular the maize landraces, which are subject to agricultural practices that promote extensive seed exchange, will inevitably lead to the widespread distribution of transgenes among these crops, maybe with the future impossibility of going back to the original state.”⁵*

¹ Offered as part of the public comments at the CEC Maize and Biodiversity Public Symposium by Timothy A. Wise, Tufts University, Medford, MA USA. 11 March 2004. www.cec.org

² Berthaud, J. and P. Gepts. 2004. Draft (24/02/04) of Chapter 3, Assessment of effects on genetic diversity, for CEC Article 13 report *Maize and Biodiversity: The effects of transgenic maize in Mexico*, and presented to the CEC Maize and Biodiversity Public Symposium in Oaxaca. p. 16 www.cec.org

³ Turrent, A. and J.A. Serratos. 2004. Draft (26/02/04) of Chapter 1, Context and background on wild and cultivated maize in Mexico, for CEC Article 13 report *Maize and Biodiversity: The effects of transgenic maize in Mexico*, and presented to the CEC Maize and Biodiversity Public Symposium in Oaxaca. p. 21 www.cec.org

⁴ Berthaud and Gepts, *op cit*.

⁵ Alvarez Morales, R.A. and J. Komen. 2004. Draft (05/03/04) of Chapter 10, Managing potential risks and enhancing potential benefits – identification and analysis of management tools and policy options, for CEC Article 13 report *Maize and Biodiversity: The effects of transgenic maize in Mexico*, and presented to the CEC Maize and Biodiversity Public Symposium in Oaxaca. p. 3-4. www.cec.org

One set of authors considered this possible scenario: “*First, an uncontrolled diffusion of transgenes to non-transgenic populations may take place. Second, if varieties with different transgenes become available and are planted, it is possible that, due to gene flow and recombination, maize populations may end up harboring multiple transgenes. ... These combinations may include transgenes that were never tested together and could even include transgenes that should not enter the human food chain (a pharmaceutical protein or an enzyme used by the food industry, for example.)*”⁶

Meanwhile, transgenic maize continues to be imported from the United States in huge quantities and serves as a continuing source of contamination.

3. Nobody yet knows what the ecological and human health consequences of Mexican maize contamination may be.

No long-term studies have been done, and what data exist are from agricultural and ecological systems very different from those in Mexico.

From chapter four: Assessment of effects on natural ecosystems⁷

“Given the tremendous biodiversity within Mexico, the number of potential effects on ecological organisms is staggering.” (p. 15)

Among the potential ecological effects described in chapter four are:

- Lethal and sublethal effects on individuals, including impacts of the Bt toxin on non-target insects.
- Population level impacts deriving from sublethal effects on individuals.
- Subsequent impacts on communities or ecosystems.

“The data applied to assessing Bt corn in the United States is (sic) not necessarily transferable to natural ecosystems outside the United States or sufficient to predict consequences on biodiversity and ecosystems function.” (pp. 13-14)

“In response to the question, “Will the introduction of transgenes have a positive or negative effect on natural ecosystems in Mexico?” we answer the following. “Existing data on transgenic maize will not address this question sufficiently. We have strong concerns that there is limited applicability of data collected this far to address the impacts of transgenic maize on biodiversity and natural ecosystems in Mexico. The ecological diversity is substantially higher than in other countries that have adopted transgenic maize, and the consequences of any changes in the biodiversity is not yet predictable from studies of ecosystem function and biodiversity loss.”” (p. 14)

⁶ Bellon, M.R., G. Tzotzos, and P. Thompson. 2004. Draft (26/02/04) of Chapter 8, A framework for judging potential benefits and risks, for CEC Article 13 report *Maize and Biodiversity: The effects of transgenic maize in Mexico*, and presented to the CEC Maize and Biodiversity Public Symposium in Oaxaca. p. 18 www.cec.org

⁷ Wolfenbarger, L.L. and M. González-Espinosa. 2004. Draft (02/03/04) of Chapter 4, Assessment of effects on natural ecosystems, for CEC Article 13 report *Maize and Biodiversity: The effects of transgenic maize in Mexico*, and presented to the CEC Maize and Biodiversity Public Symposium in Oaxaca. www.cec.org

“We join a growing number of researchers who have highlighted the lack of adequate data with which to assess the relative impact of transgenic crops on natural ecosystems and, perhaps, even broader the lack of an approach with which to assess effects on biodiversity and natural ecosystems.” (p. 15)

From chapter seven: Assessment of human and animal health effects⁸

No Mexico-specific evaluation of human health impacts has been done that takes into account:

- The Mexican maize-centered diet, where people eat between 285 and 400 grams of maize every day.
- The low level of processing of maize in Mexico for human consumption.
- The nixtamalization process and its impact on transgenic proteins.
- The compromised health status of a large portion of the population.
- That US consumption of transgenic maize is primarily by animals. Lack of evidence of harm in the US cannot be extrapolated to mean safety in the Mexican food system.
- Risks posed by new proteins being engineered into maize for non-food uses.

The place of maize in the human diet varies greatly between the United States and Mexico. Consider this recent statement by Monsanto, one of the main developers of transgenic maize, after its decision to abandon the development of genetically engineered wheat – a product they believe is “too close to an obvious food like bread.”⁹ The company says it will concentrate on genetically engineered soya beans and corn, which can be used for animal feeds or for oil – products not so emotive or so immediately identifiable with a particular human food.¹⁰ (emphasis added) One is left to wonder what they think about maize tortillas.

As mentioned above, new transgenic varieties of maize for non-food uses are being grown in the United States, such as varieties that produce drugs and industrial chemicals. These are recognized to pose serious novel risks both for human health and the environment. *“In the event of contamination of Mexican maize hybrids with such non-food properties, the results would be serious since maize is massively consumed as such by most Mexicans and especially by the poorest sectors and by the Indian communities that are particularly unaware of the possible risks.”* (p. 21)

4. “It is not too late to take action to protect traditional varieties of Mexican maize,”¹¹ but action must be taken now.

For Greenpeace, the conclusions to be drawn are obvious

The contamination has been proven and the continuing massive imports of transgenic maize from the United States are recognized as the source of the contamination. We understand clearly that traditional farmer practices unknowingly facilitate the further contamination of landraces. Large

⁸ Bourges, H. and S. Lehrer. 2004. Draft (08/03/04) of Chapter 7, Assessment of human and animal health effects, for CEC Article 13 report *Maize and Biodiversity: The effects of transgenic maize in Mexico*, and presented to the CEC Maize and Biodiversity Public Symposium in Oaxaca. www.cec.org

⁹ BBC News. Monsanto drops plans for GM wheat. 11 May 2004. www.bbc.co.uk

¹⁰ *ibid.*

¹¹ Offered as part of the public comments at the CEC Maize and Biodiversity Public Symposium by Timothy A. Wise, Tufts University, Medford, MA USA. 11 March 2004. www.cec.org

numbers of questions remain to be answered about the safety of the transgenes for the Mexican environment and the Mexican consumer; there has been no assurance of safety given in this report. Given the potential serious and irreversible impacts associated with contaminating transgenes, the only prudent course of action is to stop the contamination and clean the transgenes out of the landraces in which they are currently found.

The Joint Public Advisory Committee to the CEC came to exactly this conclusion. In their letter to the Council members dating 14 April 2004, the JPAC concludes:

“Minimally, a moratorium on imports of transgenic corn to Mexico should be put in place until the risks to human health, cultural integrity of maize producers in Mexico and the environment generally are better understood and appropriate long-term decisions can be made.”¹²

As noted in the quote introducing this document, controlling contamination is linked to controlling trade. Unless imports of transgenic maize are halted, the contamination will continue. Unless action is taken now to remediate the contamination in farmers’ fields, it will spread.

The burning question right now is: **What exactly has the advisory group said about these studies that the three NAFTA governments are afraid to show to the world, or at least afraid to show to the WTO dispute resolution panel?**

¹² Found on the CEC web site. www.cec.org.