

## Critical evaluation of Ecuadorian worker study suggesting glyphosate might cause extensive health problems

Recently a concerned mother reached out to me[Chair of the University of Florida Horticultural Sciences program Kevin Folta] about information on glyphosate. She had read on an activist website that glyphosate damaged DNA, as demonstrated in Ecuadorian workers. Dr. Paz-y-Mino et al. published the work in 2007 in *Genetics and Molecular Biology*, a small Brazilian journal. This group is recognized for good work, but the data and methods presented in this report present some serious limitations that make the findings far from conclusive—and unnecessarily scary.

Even the authors have many mundane explanations for the results. However, the title becomes a headline and is part of the glyphosate=danger mantra repeated by low-science-resolution readers that seek confirmation of their biases.

This report tests assesses “DNA damage” using what’s called a “comet assay”, an assay where cells are placed into an agar matrix, lysed and subjected to an electric field. DNA is charged, so large DNA pieces move to the positive pole. Damaged DNA moves faster because it has greater mobility- that’s the basis of the assay. The DNA smears out as a blob with a streak after it, resembling a comet.

In this report 24 people from an ag intensive area where glyphosate was used were compared to 21 in an area 80km away. Blood was drawn “between 2 weeks and 2 months” after glyphosate application to the crops. There is one table of data showing that the DNA from those living near the farm (50 percent tested were 200m – 3km).

The results show consistently higher migration in the “exposed” group, suggesting more damage, according to the authors. But the best explanation—“Blood samples (from the unexposed group) were collected and processed as for the exposed group, but not concomitantly.”

Bingo. The authors counted on one single replicate that was processed at different times. How the blood was handled, how it was prepared... all could easily account for the results seen. The fact that it was one replicate is also quite telling. I’d never publish with fewer than three on this kind of test.

The best thing that could be said is that the data show a potential starting point. It would have been good to see the data and have the controls and treatments collected and processed blindly and at the same time.

**Read the full, original article:** [DNA damage and glyphosate? Critical evaluation of a 2007 report](#)