

Manganese Nutrition of Glyphosate-Resistant and Conventional Soybeans... Setting the Record Straight

By Dr. Barney Gordon, Kansas State University

The recent article (April 20, 2008) by Environment Editor Geoffrey Lean in the British newspaper *The Independent* (>link<) is, to put it bluntly, a gross misrepresentation of my research and a good example of irresponsible journalism. In his article Mr. Lean claims that my work, as reported in Issue No. 4, 2007, of *Better Crops with Plant Food* magazine (>link<), shows that “genetic modification actually cuts the productivity of crops”, further stating that my work “has found that GM soya produces about 10 percent less food than its conventional equivalent.” These statements, among other assertions in Mr. Lean’s article, are ripe for clarification. This brief piece is my attempt to set the record straight before the perversion of my research findings and the resulting backlash go any further.

The experiment was a straight-forward soil fertility study designed to evaluate response to a particular nutrient (manganese) that may be limiting yields in a specific environment, with two related but not identical soybean varieties. No genetic or physiological components, beyond nutrient uptake, were examined. The objective, as stated in the *Better Crops* article, “was to determine if GR soybeans respond differently to applied Mn than conventional soybeans and, if so, to develop fertilization strategies that will prevent or correct deficiencies leading to improved yield for soybean producers.”

My research investigated Mn response in soybeans under very high yielding conditions, a continuation of well recognized and published ongoing research in the nutrition of crops in high-yield environments. As stated in the *Better Crops* article, the two varieties used were near-isolines...they were not completely iso-genetic. This means that their genetic differences go beyond just the glyphosate-ready trait. Furthermore, only one pair of varieties was used in the experiment. Hence, it is unconscionable in scientific, and for that matter practical terms, to make blanket statements about genetically modified crops based on only this pair of varieties grown at this specific site.

As for the statement in *The Independent* that my work shows that “genetic modification actually cuts the productivity of crops”, consider first and foremost that the experiment was not designed to address this question. For example, plots for both varieties were worked-over by hand to remove weeds, as we were interested in only

studying the effect of Mn on the experiment and not on the effect of weeds in the crop. Furthermore, the claim that GM soybeans produce 10% less yield than conventional is misleading, in that when the lowest rate of Mn was applied to GR soybeans there was no yield difference between the two. Also, the *Better Crops* article included 2 years of data because, at

the time of writing, compilation of the third year’s data had not been completed. In the third year of the experiment, both the conventional and GR variety responded to the addition of Mn, probably due to much different growing conditions in year 3. Thus, environmental conditions during a particular growing season are an important factor in yield response. It is important here to note that this was a very high yielding environment where all other plant nutrients were adequate and irrigation was available, and that most soybeans worldwide are grown in more moderate yielding environments. So, simply put, it is inappropriate to use the results of my work to make these broad-brush claims.

The freedom to investigate meaningful questions, and then extend and publish the results is what enables us to continue to advance our crop production systems to meet accelerating demands, and at the same time maintain and even improve our environment. Unfortunately, at times research findings can be exploited to inappropriate ends, as was done by Mr. Lean in *The Independent*. ■

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Abbreviations and notes for this article: GM = genetically modified; Mn = manganese; GR = glyphosate-ready.

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