FORCE FEEDING?

GM's impact on the Global South

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Welcome

Welcome to this edition of *Force Feeding?,* our newsletter designed to keep readers up-to-date with GM and biotechnology issues that impact on the Global South. We hope you find it interesting and can make use of the information and analysis it provides.

GM Freeze would very much welcome your comments so we can improve what we send out and maximise its value to readers. Please send your feedback to pete@gmfreeze.org.

Thirteen Reasons Why the Roundtable On Responsible Soy Will Not Provide Responsible or Sustainable Soya Bean Production

Introduction

This briefing covers the major issues of concern relating to the production of soya beans and the proposals by the Roundtable on Responsible Soy (RTRS) to certify "responsible" soya beans. It sets out the case as to why the current pattern of soya production will never be responsible or sustainable and therefore why any companies considering becoming members of the RTRS should think again.

There are many definitions of responsible in dictionaries. The one that best fits the RTRS would probably be: *"Based on or characterized by good judgment or sound thinking".* This seems like a good basis on which to judge the RTRS proposals for any company thinking of signing up.

Background

RTRS's "responsible" soya would largely supply feed for intensive poultry and livestock as well as bio-diesel production. Companies making a decision to support RTRS would be directly supporting major environment harm, threats to health and human rights human abuses.

The RTRS calls itself a "multi-stakeholder dialogue that intended to promote the use of a responsible standard of soya production, processing and trade".[i] It was first proposed in 2005 by WWF after the Basel Criteria for Responsible Soy Production failed to gather multi-stakeholder support (ie, was not supported by big business).

In order to get the big soya players – ADM, Bunge, Cargill, etc. – to participate, WWF had to greatly weaken their approach. That included avoiding the whole issue of GMOs, and also weakening the requirements around deforestation. As it stands now, the RTRS draft "criteria" totally ignore the critical issue of GMOs – and they allow deforestation of the Amazon as long as it is in an area that is "zoned" for agricultural use.

The credibility of any agreed criteria through the RTRS process has been significantly weakened by the resignation of two major Brazilian organisations in the soya supply

chain: Aprosoja (representing 6000 soy producers in Matto Grosso) left in May 2009 and ABIOVE[ii] (representing the Brazilian vegetable oil sector) left in March 2010. Both withdrew over the criteria relating to forest losses (4.4).

GM soya beans
Soya beans are the only crop where GM seeds account for more than half (73% in 2009) of the global area planted. Nearly all commercial GM soya bean planting is Monsanto's Roundup Ready (RR) soya, which is tolerant to glyphosate. In Argentina and the USA over 90% of soya beans grown were RR in 2009, illustrating how very dependent on one crop supplied by one company farmers have become. Therefore the inclusion of GM soya beans in the RTRS criteria is significant and controversial.

What's the problem with GM soya?
RR GM soya dominates production in Argentina, Paraguay and parts of Brazil and is now moving into Bolivia and Uruguay. However, non-GM soya is still being grown extensively in Brazil in sufficient quantities to meet the total demand of the EU.[iii] RR soya is genetically modified to tolerate Monsanto's best selling herbicide Roundup, based on the chemical glyphosate, which kills most plants including their root systems. GM soya (like non-GM) is grown on a massive scale with a very high level of mechanisation and consequently a low requirement for labour. The RR gene allows the growing crop to be sprayed killing all weeds but allowing the crop to grow on.

Environmental, health and environmental problems from GM soya monocultures include:

1. Weed resistance
Weed resistance to glyphosate is now a major problem in RR soya crops because the GM system is over reliant on Roundup. There are now 18 weed species[iv] resistant to glyphosate around the world, and weed scientists agree that GM herbicide tolerant (GMHT) crops have been responsible for the acceleration of these numbers since around 2000:

> *"Most of the documented cases of evolved GR* (glyphosate resistant) *weeds in the past 6 years have been in GR crops".*[v] *(insert ours)*

In North and South America highly invasive and persistent weeds have developed resistance to glyphosate, and in some cases multiple resistance to other types of herbicides[vi] (eg, sulpho-nylureas and triazines), which are applied by spraying or as residual herbicides in the soil. In Argentina aerial spraying to control weeds has been reported to be common. Thus resistance is now a major problem for the growers of GMHT crops, but the only solution the GM industry has is to apply more herbicides. Thus promises that GMHT crops would reduce the amount of herbicides required have been found wanting and, in fact, US data shows a net *increase* in the 13 years since GM crops were first grown:

> *"an additional 318 million pounds of pesticides were applied due to the planting of GE crops from 1996 through crop year 2008."*[vii]

Such an increase can hardly be described as “responsible”.

2. Soil damage
There is growing concern that the repeated use of glyphosate in RR soya and other RR crops may be impacting on the composition and functions of soil microorganisms. A recent review of evidence found increases in root-colonizing and soil populations of *Fusarium* and other rhizosphere bacteria. Effects found included reduced manganese availability for plants and reductions in the size and effectiveness of nitrogen fixing nodules on soya beans. The authors concluded:

> *“our current view of the complex interactions in GR soybeans …illustrates the limited information available and areas of research where research is desperately needed such as the impacts on myycorrhizal fungi.”*[viii]

Thus GMHT soya has been introduced in a most irresponsible way without first understanding its impact on soil ecosystems.

3. No environmental impact assessment
In the UK the Government sponsored farm scale evaluations (2000-2003) to examine the indirect impact of GMHT crops on farmland biodiversity. Glyphosate tolerant beet was one of the crops studied, and the results showed that, compared with conventionally grown crops, RR had a significant detrimental impact on weeds and weed seeds that are important for farmland birds and other farmland wildlife[ix]. As a consequence, the UK Government decided not to approve RR sugar and fodder beet because of the threat they posed to farmland wildlife including birds, pollinators and predators.

No such research was carried out on RR soya crops in South and North America prior to their commercial cultivation. The impacts on soils have not been fully assessed before commercial growing commenced (see section above). Other direct and indirect impacts on non-target species and biological process have also been ignored, for instance the impact of RR soya cultivation on amphibians[x] and invertebrate predators.[xi] So once again it cannot be said the RR soya has been introduced in a responsible way, and there are huge data gaps as to its long-term environmental impact.

4. Bystander herbicide exposure
The regular spraying of RR soya bean crops with glyphosate (often in mixtures with other herbicides and from the air to control resistant weeds) means that communities in the vicinity of soya ranches are in constant threat of spray drift. Many incidents have been recorded including 15 fatalities in the Brazilian state of Piarí in 2005[xii] and a farming community in Formosa province of Argentina, which suffered drift of glyphosate and 2,4D onto their homes.[xiii] Recent research has suggested that the adjuvants used in Roundup formulations mean it is more toxic than glyphosate alone because the additives used enable the herbicide to penetrate human cells more readily.[xiv] People working or living near GMHT soya bean farms would be most likely to be exposed to Roundup. There is now a call for a ban on glyphosate in Argentina.[xv] Thus the use of Roundup on GMHT soya can hardly be classed as “responsible”.

General impacts from soya production include:

5. Forest and habitat destruction
The expansion of soya bean plantations in South America continues to destroy several major ecosystems with great biodiversity significance, such as:

- forest in The Amazon basin
- the savannahs of the Cerrado in Brazil
- the Atlantic Forest systems in Paraguay, Argentina, Uruguay and Brazil
- the Chaco Forests of Argentina, Paraguay, Bolivia and Brazil
- the Chiquitano Forest of Bolivia

For example only 10% of Atlantic Forest remained in 2008, and one report suggested that soya expansion could destroy another 1.5 million hectares by 2010. The IPCC estimate that tropical forest destruction contributes 20% of global CO_2 emissions.[xvi]

Thus habitat clearance contributes massive amounts of carbon as a result of burning, and so far the RTRS has not agreed a cut-off date after which no further habitat loss would be permitted if a company wanted RTRS certification. The current RTRS drafts allow for further soya expansion on land cleared of native vegetation before a cut-off date. After this cut-off date, clearance will take place only on land that has been designated as an agricultural expansion area by an official and public participatory process (land use planning) and outside areas identified as High Conservation Value Areas. How this will be achieved in practice is not addressed by the RTRS principles and draft criteria, especially in areas where illegal logging is taking place.

In short, the RTRS principles and draft criteria will allow deforestation of the Amazon as long as it is in an area that is "zoned" for agricultural use.

What that means in practice is that big farmers will continue to bribe local government to "zone" areas of the Amazon as open for clearing for agriculture. So clearing of the rainforest will simply continue, but now painted green with a big "RTRS Approved" seal. RTRS does not specify how such corruption will be prevented.

There is no indication that RTRS can prevent further soya-induced destruction, and in the absence of a credible traceability system it is difficult to accept RTRS criteria as ”responsible”.

6. Rural depopulation and damage to the rural economy
Another major impact of the expansion of huge soya estates is the destruction of traditional farming systems and depopulation of rural areas. Employment opportunities on soya estates for the small farmers displaced are minimal, with just one employee for every 200 hectares of soya plantation. Thousands have left to seek employment in the cities. Thus a rural society based on mixed farming is rapidly being destroyed. RTRS has no provisions to deal with the social and economic consequences of such a major upheaval.

7. Humans right infringed
The rush for soya cultivation has resulted in wealthy and often foreign landowners moving in to take over land in Argentina, Paraguay and Brazil.[xvii & xviii] One incident described how land has been obtained:

> *"Protected by the police and military, Brazilian soybean growers attacked Tekojoja, a peasant community in Caaguazu, Paraguay, in June 2005. They evicted 400 people and burnt their crops and all 54 houses. Two men, Ángel Cristaldo and Luis Torres were killed, many were injured and 160 people, many of them women and children, were arrested. Caauguazu is one of the frontier areas of soy expansion."*[xix]

Slavery has been recorded on some soya estates. The Brazilian Federal Government established a "laundry list" of agricultural establishments using slave labour in 2007 and one in 20 of these produced soya.[xx]

8. Poor diet and malnutrition
Argentina was once a productive country producing 8-10 times more food than was required by the population. However the expansion of soya estates has displaced home grown food in favour of imports, and this has brought with it cases of malnutrition in poor communities as the price of these imported foods soared.[xxi] Such major social changes arise from soya expansion and can hardly be described as "responsible".

RTRS draft criteria do not adequately address any of these major impacts on people and the environment.

9. Lack of democracy
There are no organisations representing small and family farmers or indigenous people involved in the RTRS process. Many groups feel the RTRS seeks to legitimise the irresponsible and unsustainable practice of industrial soya production and justify even greater expansion, regardless of the human and environmental costs.[xxii]

Inherent weaknesses in RTRS proposals include:

10. How will RTRS be monitored and enforced?
This is not clear. How monitoring and enforcement will be paid for, or when and how sanctions will be applied if criteria are broken or ignored, is not clear either. Current drafts are vague in these areas, for example:

> *"Habitats for rare, threatened or endangered native or endemic species are maintained and safeguarded.*
>
> *"Everyone should do planning and monitoring and mapping. Monitoring procedures need to be scale dependent. The monitoring could be done at group level if necessary."*[xxiii]

This is hardly a convincing plan to prevent further biodiversity losses.

Similarly how abuses of land and human rights will be monitored and enforced over thousands of square kilometres of land is not made clear.

11. Will RTRS accredited soya mean anything to consumers?
The current criteria will add to the confusion by allowing unsustainable GM soya to be included in the RTRS "approval". A fundamental problem with the RTRS draft criteria is that they seek to justify an unsustainable production system that many consumers would find unacceptable.

The RTRS is currently putting forward a two-tier system for traceability of accredited RTRS soya based on segregation of certified RTRS crops or "mass balance". The latter allows soya loads to be accredited as meeting the RTRS criteria while containing unspecified amounts of non-certified soya - leaving consumers completely in the dark.

12. Will RTRS command a premium price to encourage participation?
It seems very unlikely RTRS soya will command a premium price, especially if full traceability is not on offer and the damaging production of soya is allowed to continue largely unaffected. Lack of a price incentive was one reason why ABIOVE resigned from RTRS:

> *"Another highly relevant point is the lack of definition regarding the mechanisms for economic compensation of producers who comply with all requirements and are certified. The discussions about having consumers pay a premium for certified product were blocked by the arguments raised by retailers, such as they don't trade soybeans but foodstuffs made with this raw material or ingredient. It is hard to convince consumers to pay a higher price for foods produced with soybeans, such as meats, margarines, crackers, etc... In addition, proposals to pay for avoiding deforestation and for environmental services to provide financial compensation to producers willing to give up their right to produce went nowhere. Therefore, it will be more difficult to persuade producers to assume new and onerous commitments, with no economic counterpart."*[xxiv]

13. Global opposition to the RTRS
An open letter calling on the RTRS process to abandoned has been signed (as of 6th May 2009) by over 60 organisations from around the world, including the Global Forest Coalition, Friends of the Earth International and country based groups in the USA, India, Argentina, Brazil, Colombia and Uruguay.[xxv]

Summing Up
Signing up to endorse the Roundtable on Responsible Soya criteria is fraught with difficulties or worse. It is hard to imagine how anyone could classify the RTRS criteria as being *"based on or characterized by good judgment or sound thinking":*

- GM soya is dominating production in many countries, and the rapid development of weed resistance suggests that this method of production is neither responsible nor sustainable.

- The history of soya cultivation is bedevilled by stories of exploitation, land grabbing and habitat destruction. The RTRS has been unable to deal with the

crucial issue of habitat destruction to the satisfaction of its members, and as a result two major Brazilian players have resigned. In practice this is likely to mean that big farmers will continue to bribe local government to “re-zone" areas of the Amazon as open for clearing for agriculture. So clearing of the rainforest and loss of family farms will simply continue, but will be painted green with a big "RTRS Approved" seal.

- The public will not be impressed with a set of criteria which does not protect habitats and has no credible traceability scheme in place.

We suggest that monies given to RTRS by UK companies would be better invested in developing production systems that were not soya dependent and offered livestock and poultry producers every chance of being profitable.

GM Freeze
GM Freeze is a not for profit company limited by guarantee, owned and controlled by our 55 member organisations.

The campaign is calling on the Government for a Freeze on:

- the growing of genetically modified plants and the production of genetically modified farm animals for any commercial purpose
- imports of genetically modified foods, plants, farm crops and farm animals, and produce from genetically modified plants and animals
- the patenting of genetic resources for food and farm crops

The GM Freeze campaign is supported by an alliance of national organisations who share the public's deep concern over the speed at which genetic engineering is being introduced into food and farming. The alliance encompasses a wide range of interests including environmental campaigns, trade unions, development charities and religious groups. They are united by a belief that we must stop and think about the huge implications of this new technology and the questions that remain to be answered about its safety and impact.

For more information about GM Freeze email info@gmfreeze.org or visit our website www.gmfreeze.org.

Notes

[i] http://www.responsiblesoy.org/about_us.php
[ii] See ABIOVE resignation letter http://www.nevedi.nl/UserFiles/File/ABIOVE%20uit%20RTRS.pdf
[iii] See report on the 2nd Non-Gm Soya Summit at http://www.non-gmoreport.com/articles/dec08/opportunities_challenges_of_non-gmo_market.php
[iv] See http://www.weedscience.org/Summary/UspeciesMOA.asp?lstMOAID=12&FmHRACGroup=Go
[v] Duke, SO and Poels, SB, 2008 "Glyphosate:a once-in-a-century herbicide". *Pest Manag Sci* **64**: pp319-325 (2008).
[vi] See GM Freeze briefing http://www.gmfreeze.org/uploads/resistance_full_Briefing_final.pdf
[vii] Benbrook C, 2009. *The Impact of Impact of Genetically Engineered Crops :on pesticide Use: the first 13 years.* See http://www.organic-center.org/reportfiles/13Years20091126_FullReport.pdf
[viii] Kremer RJ and Means NE .2009 Glyphosate and glyphosate-resistant crop interactions with rhizosphere microorganisms. *European Journal of Agronomy* (31) pp153-161
[ix] See advice by ACRE 13 Janaury 2004 at http://webarchive.nationalarchives.gov.uk/20080306073937/http://www.defra.gov.uk/environment/acre/advice/pdf/acre_advice44.pdf.
[x] Lajmanovich, RC, MT Sandoval, and PM Peltzer. 2003. *Induction of mortality and malformation in Scinax nasicus tadpoles exposed toglyphosate formulations*. Bull. Environ. Contam. Toxicol. 70:612-618.46.
[xi] Bell, JR et al. 2002. *Manipulating the abundance of Lepthyphantes tenuis (Araneae:Linyphiidae) by field margin replacement*. Agric. Ecosys. Environ. 93:295-304.
[xii] The Dutch Soya Coalition, 2008. *Soy: Big business, big responsibility.*
[xiii] Informe Grupo de Estudios Rurales (Rural Studies Group Report), April 2008, UBA and Asociación de Feriantes de Pirané (Market Vendors Association of Pirané), Formosa. See www.biodiversidadla.org/article/articleview/3575/1/8/.
[xiv] Benachour N and Séralini G-E, 2009. Glyphosate Formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic, and
Placental Cells, *Chemical Research in Toxicology* Vol22 No1 pp 97-105 available from http://pubs.acs.org/doi/pdf/10.1021/tx800218n.
[xv] All Business, 2009. See www.allbusiness.com/government/government-bodies-offices-legislative/12734832-1.html.
[xvi] IPCC, 2007. Climate Change 2007: *The Physical Science Basis.Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S; D Qin; M Manning; Z Chen; M Marquis; KBM Tignor and HL Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp
[xvii] *Ibid*
[xviii] Dutch Soy Coalition, 2008 *op cit*
[xix] Dutch Soy Coalition, 2008. *Land conflicts in the Latin American soy sector Fact Sheet 3.* See http://commodityplatform.org/wp/wp-content/uploads/2008/12/dsc-factsheet-3-land-conflicts-final-december-2008.pdf
[xx] See *Slave Labour Laundry List* http://commodityplatform.org/wp/wp-content/uploads/2008/12/dsc-factsheet-3-land-conflicts-final-december-2008.pdf
[xxi] Joensen, L, Semino, S and Paul H, 2005. *Argentina: A Case Study on the Impact of Genetically Engineered Soya.* See www.econexus.info/pdf/ENx-Argentina-GE-Soya-Report-2005.pdf.
[xxii] See open letter from civil society organisations around the world at http://lasojamata.iskra.net/en/node/373
[xxiii] http://www.responsiblesoy.org/files/292.pdf.
[xxiv] Letter from ABIOVE to the President of the RTRS dated 31 March 2010, See www.nevedi.nl/UserFiles/File/ABIOVE%20uit%20RTRS.pdf.
[xxv] Text of the letter and signatures can be accessed at www.gmwatch.eu/archives/64-Letter-of-critical-opposition-to-the-Round-Table-on-Responsible-Soy.html.