



THE RAM'S HORN

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Silencing Spring

“It is simply a fact that the type of agriculture practiced on the prison farms is totally unrelated to modern high-technology capital intensive agriculture.” – *Public Safety Minister Peter Van Loan, defending the government’s decision to shut down 6 prison farms, WP, 9/4/09*

In other words, please don’t maintain any illusions about federal agriculture policy. It’s still stuck in the rut that has characterized federal agriculture policy for the past three decades of neoliberal ideology. The “policy framework” is now styled “Growing Forward” but remains true to the same vision which features, not food for the people of Canada, but “innovation and competitiveness” : “A profitable, innovative, competitive, market-oriented agriculture, agri-foods and agri-based products industry.”

The good news is that we can be assured, because we have been told over and over again by the CFIA, that “Canada has one of the safest food systems in the world.”
– *Press release, 9/2/09*

The guy who headed the CFIA when it was established in 1997 as a supposedly autonomous unit of Agriculture and Agri-Food Canada, Ron Doering, retired from the CFIA not long ago and now works as a lawyer-lobbyist for the food industry. When asked about the dual role of the CFIA as an industry promoter and regulator, Doering said recently that “it’s like saying a police officer cannot help an elderly person cross the street and then minutes later pull a gun to take down a bad guy”. Doering’s charming turn of phrase fails to reassure us about the CFIA’s dual mandate to promote the food industry and serve the public interest in food quality and safety. It is the CFIA, after all, that has consistently helped Monsanto across the street for more than a decade by refusing to allow non-genetically engineered food to

be labelled as such, while training their guns on small-scale, locally-focused abattoirs and food processors.

It should, then, come as no surprise that neither the CFIA nor Health Canada regard agrotoxins in and on our food as a food safety concern.

Snail’s Pace

We got married in 1964, two years after Rachel Carson published *Silent Spring*. In 1984, as our children were preparing to leave home for university, a farmer in Saskatchewan reported that the chemical carbofuran was killing birds. “He returned to find the bodies of several thousand Lapland Longspurs dotting the field,” according to a report on the incident by the Canadian Wildlife Service (CWS). The Lapland Longspur is a sparrow-like songbird that breeds in the Arctic and winters in open fields across southern Canada and the United States.

In May 2009, 25 years later, Health Canada finally came out with a proposal to “phase out all uses” of the pesticide, decades after Canadian government officials first learned carbofuran was wiping out everything from flocks of songbirds in the Prairies to eagles in British Columbia. This much belated act was only in response to the ruling of the U.S. Environmental Protection Agency (EPA) to forbid the sale of any domestic or imported food crops that have traces of carbofuran, marketed as Furadan.

It’s not that the 1984 report was an isolated incident. In 1993, Agriculture Canada published a special “discussion document” on the chemical that states “carbofuran has one of the highest

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recorded toxicities to birds of any insecticide registered for use in Canada.” A single grain of carbofuran – the size of piece of sand – or a single tainted earthworm can be lethal, the document says. “On the basis of kill rates reported in company studies conducted in cornfields, it can be concluded that the use of granular carbofuran will result in the death of a large proportion of the songbirds breeding in and around treated fields.”

Despite such findings, the government allowed use of the pesticide to continue.

The Globe and Mail tried to interview Pierre Mineau, a research scientist with CWS and one of the world’s leading experts on carbofuran’s environmental impact, but when the newspaper refused to provide questions in advance, Environment Canada officials said Dr. Mineau was not available. Agriculture Canada directed all questions to Health Canada, which declined to provide anyone to be interviewed.

“Health Canada is in the process of preparing a publication on the re-evaluation of carbofuran to be released this summer, which will be proposing to phase out all uses,” Philippe Laroche, a ministry media spokesman, stated in an e-mail. “The re-evaluation of carbofuran indicates that this insecticide poses unacceptable risks to human health and the environment,” he wrote.

Jim Fitzwater, a spokesman for FMC Corp., a Philadelphia company that manufactures carbofuran under the trade name *Furadan*, said FMC is planning to file an official objection to the EPA ruling, and hopes to have that decision reviewed. He declined to say how much *Furadan* is sold in Canada, but a 1991 report by Health Canada states that between 100,000 and 500,000 kilograms was being used annually on crops.

– *Globe and Mail*, 21/5/09

Sovereignty, eh?

Dow AgroSciences, a US company, is suing the Government of Canada for \$2 million in compensation under NAFTA for lost business in response to a ban by the Quebec Government on lawn (non-industrial, cosmetic) pesticides containing 2,4-D. Dow said the Quebec ban was not driven by science but by “political, social or cultural considerations.” Federal Trade Minister Stockwell Day, responded, “The NAFTA preserves

the state’s ability to regulate in the public interest, including public health and environmental issues related to pesticides.” To which Dow countered, “we filed this notice to protect our rights under NAFTA.” In the lawsuit, which is going to a three-member NAFTA arbitration panel, Dow accuses Canada of breaching its obligations under Chapter 11 of NAFTA and seeks damages covering loss of sales, profits, goodwill, investment and other costs related to the products.

– *Ottawa Citizen*, 10/4/09

Serious Seeds

by *Patrick Steiner*

The past few months have been a really busy time for Stellar Seeds and for many of the seed companies across Canada. All of us have seen the volume of seed we sell increase dramatically from the year before – our own sales probably rose by close to 40%. I have heard figures of 25-30% from some of the more well known seed companies in Canada, and in talking to owners of other small organic seed companies they have mentioned even doubling or tripling of sales!

In talking with our customers we’ve realized there are many reasons to explain this. The worldwide financial meltdown has certainly made people aware of the money they spend on necessities, and many Canadians seem to be expanding or even starting gardens for the first time in order to ‘grow their own’ and save money. The global food crisis in 2008 also seemed to make people aware that our daily bread can’t just be taken for granted, that food availability can change rapidly, and food prices can rise even more rapidly. And then there is the trend in local food that has been spurred by the rise in popularity of farmers markets, and the much-touted 100 Mile Diet. Canadians have embraced the idea of local food, and come to the conclusion that it doesn’t get any more local than your backyard. So they are taking shovels to their lawns and sending in their seed order. I just heard the CBC report that in 2009, for the first time in “retail history”, sales of vegetable seeds outstripped sales of annual flower seeds. How’s that for a sign that people are concerned about their food security!

I’m also happy to report that people are aware of the issues around the corporate concentration of our seed supply. We get many, many customers calling us and saying that they are specifically interested in sourcing non-GMO, open-



pollinated, heirloom and organic seeds. They want to buy them from a local seed company and they want to try saving some of their own seeds. I don't expect this trend will stop anytime soon, I think 2010 will see still more people getting interested in growing their own food. This means that we really need more people saving and producing seed too, because a lot of the seed companies I've talked to are selling out of their seeds much earlier than before.

Patrick Steiner and his partner Colleen O'Brien operate Stellar Seeds in Sorrento, B.C. – www.stellarseeds.com

Don't blame the pigs!

by Cathy Holtlander

Pigs are taking the blame for the global outbreak of swine flu, but the so-called pandemic is not their fault. Influenza is a social disease, and this pandemic is a social phenomenon. . .

If we take the time to understand the social ecology of influenza we will be better equipped to prevent future occurrences because swine flu is merely the latest symptom of a chronic economic disease characterized by corporate control of food production, exploitation of workers and animals, financial speculation and aggressive global trading.

In Mexico, as in Canada and the United States, hog production underwent massive structural change over the last 25 years owing to new policies designed to ramp up production, shift it to vertically integrated corporations, and sell our product to other countries cheaper than they produce it themselves. Communities once self-reliant in food production are now dependent on imports. Globalization remodelled agriculture into agribusiness, and food became a mere commodity on world markets.

In the past, most North American hogs were raised on family farms dispersed throughout the countryside. Hogs were butchered on farms or at local abattoirs and regional packing plants. Supply and demand were pretty much in balance, and there was little export.

US-based Murphy Farms (bought out by Smithfield in the 1990s) was the first company to start raising hogs indoors using an assembly line approach. The company grew, and quickly gained more and more market share.

Soon other companies were emulating the Murphy approach, and factory farming of hogs took off. The new production model arrived in Quebec around 1994 and spread to the rest of Canada thereafter as federal and provincial policies and regulations were amended to encourage its expansion.



Where once a large hog farm boasted 100 sows, 5,000-sow operations producing tens of thousands of hogs per year soon became the norm. Smaller outfits went bankrupt. A few small diversified farms continue to raise smaller numbers of hogs for their local markets, but today most pork consumed in Canada comes from factory farms. In fact, Canada produces far more pork than we can eat, so we export about half of our production.

NAFTA triggered the same restructuring process in Mexico when farmers there were forced to compete with cheap imports from the US. Some farms grew bigger and more industrialized; many went out of business. As time went on, there as here, the minimum size of a commercial hog barn grew bigger and bigger. Mexico began to pursue an export pork agenda and companies such as Smithfield Food moved in to take advantage of the country's low wages – reducing costs while centralizing production in fewer, larger facilities.

Without the backing of Canadian, US, and Mexican policy-makers and the trade agreements they have signed, the environment in which this swine flu pandemic evolved would never have existed. The unnecessary deaths caused by this disease are one more cost of the export-oriented cheap food regime that has taken hold in North America and around the world.

If Canadians are serious about preventing the next, perhaps more deadly pandemic, we must adopt food policies that respect the health of workers, the integrity of animals, the skills and knowledge of small farmers and the meaning of food culture in our lives. We need to create an environment where a pandemic cannot take hold.

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. . . A major portion of agriculture safety net payments in Canada are propping up the hog industry – investing those dollars towards an agriculture system that takes care of land, people and animals and promotes health is a better use of public funds. We urgently need to get beyond factory farming.

Cathy Holtslander works for Beyond Factory Farming, a national advocacy group for socially responsible livestock production in Canada.

Visit the website at www.beyondfactoryfarming.org

During the past two years, 28% fewer farms across the country report hog production, according to Stats Canada. Hog inventories are down 18% over those two years. Meanwhile, Canada imports approximately 200,000 tonnes of pork from the USA, half the Canadian market demand. (WP, 12/3/09) So what does the Canadian Pork Council call for? Access to new export markets for Canadian pork!

Dying Hog Industry Asks for a Billion

by Paul Beingessner

There used to be lots of hogs raised on diversified farms in the prairie region. Pigs had the title of mortgage lifters. Many farmers were in and out of pigs frequently. It was easy to ramp up numbers when prices were high, since pigs reproduce early, often and with large litters. It was just as easy to reduce numbers to a minimum when prices were low.

When factory hog farms came along, the dynamic changed. Instead of reducing production in times of low prices, they doggedly kept on churning out pigs. They had to do something to cover their huge fixed costs. Prices responded by sinking and remaining low. Toss in the occasional closed border due to real or imagined disease threats, and hog farms have lost vast sums of money for over a decade. Of course, the low prices that battered the huge hog barns destroyed the little ones. Hogs disappeared from the prairie landscape, to be sequestered in massive, sealed complexes.

When government bureaucrats and agricultural economists were lauding the development of massive hog operations fifteen to twenty years ago, the early barns looked good. What the public seldom knew was that they were propped up by government subsidies for everything from water development to building construction. Almost all of those early barns are gone now, and gone are the community dollars that poured into the pockets of the early entrepreneurs. The government

of Saskatchewan still owns huge hunks of one hog empire, and loans from many years ago remain unpaid for many barns. These loans were to be repaid when profitability returned. Profitability remains elusive.

The truth is, every hog added to our inventory had to be exported, with most of these going to the US, itself a huge exporter.

Now, hog farmers across Canada have asked the government for a billion dollars in ad hoc payments to drag them through the worst crisis they've faced.

– 25/05/09

Billionaires' greed

The photos all make them look like nice paternal gentlemen: well groomed, well dressed, pleasant appearances (well, mostly – Warren Buffet and Mexico's Carlos Slim never look overly friendly) and almost always men – or perhaps it is always. That's the Forbes annual list of the world's billionaires, whose numbers dropped from 1125 to 793 in the past year. Today's billionaire (or perhaps yesterday's, given 'the market's' continuing decline) is valued at \$3 billion. Their 'value' dropped an average of \$900 million last year. Are you feeling sorry for them yet? Bill Gates is once more at the top of the list with \$40 billion, which gives him the 'right' to decide who gets to receive his agricultural development (read biotech seeds, fertilizer and marketing advice) charity. (See *Mariam Mayet's comments*, p. 6)

The big headline in the Report on Business (*G&M*, 2/4/09), "How much is too much" suggests there might be some ethical question about obscene executive 'compensation' – like Michael Sabia's \$14.6 million in severance pay when he left his position as president and CEO of BCE Inc. last summer. He also received another \$7 million on the occasion for a total of \$21 million. Sabia has also started collecting an annual pension from BCE of \$968,750 last year at the age of 55! The paper also reports that the retiring CEO of Manulife Financial Corp. will receive \$12.6 million (US) for five months work this year.

One has to wonder how a person appropriating that much for himself can live with himself.

In Canada, the average CEO severance is still between two and three times annual compensation. The median payout in cash and bonuses in 2008 in the US for CEOs was down 20% from 2007, but was still 48 times what the average US worker makes. Over all, the heads of resource companies took the biggest hit, with their median compensation falling 26% to about \$6.3 million.

– source: *GM*, 1/15/09

Kerala labourers return from Dubai

The return of labourers to India from Dubai, where they worked mainly in construction, is just one manifestation of a mass movement of people who have lost work and must return home. "The concern is not just that mass unemployment will lead to social unrest, but that local economies will suffer as remittances dry up. About 2 million people from Kerala work abroad, almost 90% of them in the Gulf and Saudi Arabia. Many are poor, unskilled labourers. . . Every year migrant workers remit some \$8 billion to Kerala . . . The first time the coastal villages' fortunes rose was in the 1950s, when a Norwegian aid project helped modernize fishing. But as the seafood business dries up because of over fishing in the 1990s, the Gulf provided a much bigger bonanza

– *GW*, 10/4/09

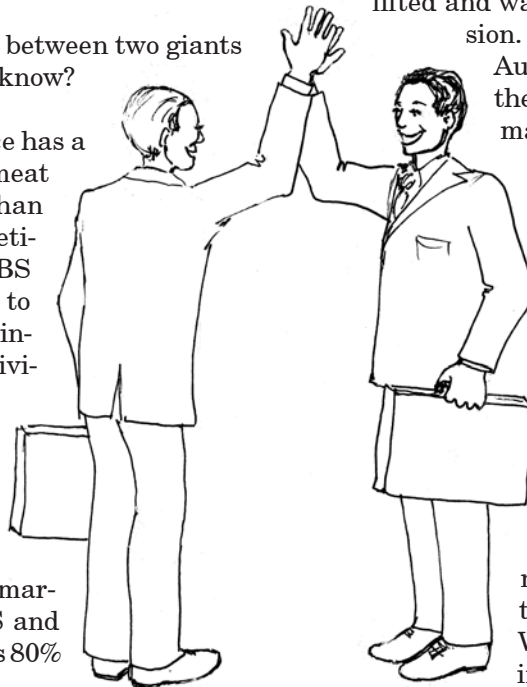
Full Cost-Accounting

The US Environmental Protection Agency plan for measuring a biofuel's effects on land cultivation would "kill off" U.S. corn-based ethanol. Researchers report that ethanol derived from corn grown in Nebraska requires 50 gallons of water per mile driven, when all the water needed in irrigation of crops and processing into ethanol is considered. – *Peak Oil Review*, 11/5/09

Meat Packers Update

A 50/50 split of the market between two giants is 'competitive', didn't you know?

The US Dept of Justice has a rather different view of meat industry concentration than Canada's so-called Competition Bureau. Last year JBS SA of Brazil made a deal to purchase Smithfield Foods, including its National Beef division. The Dept of Justice approved JSB's purchase of Smithfield but not its National Beef division, ruling that if JBS got National, it would give JBS more than a third of the US beef market and the – Cargill, JBS and National – three companies 80% of industry capacity.



COMPETITION: THE CANADIAN MODEL

Meanwhile, back in Canada the federal Competition Bureau has given the okay for XL Foods of Calgary to buy Lakeside packers from its US owner, Tyson Foods, even though that will leave XL

and Cargill owning almost all beef slaughter plants in Canada – 95% of industry capacity. (The Competition Bureau allowed Cargill to buy Better Beef in Guelph, Ontario, in 2005.)

Apparently three or less giants would be detrimental to competition in the USA, but two in Canada is not anti-competitive. The Bureau said the major concern was that the plant should not close. Tyson will continue to operate its plant in Pasco, Washington, and buy cattle from Canada, it says.

Germany Bans Cultivation of Monsanto GMO Maize

Germany has banned cultivation and sale of genetically modified (GMO) maize. The ban affects Monsanto's MON 810 maize which may no longer be sown for this summer's harvest. Germany joins France, Austria, Hungary, Greece and Luxembourg in banning MON 810 maize despite its approval by the EU for commercial use throughout the bloc. The decision to ban was based on scientific factors and was not a political one, German Agriculture and Consumer Protection Minister Ilse Aigner said.

The EU Commission, the bloc's executive arm, has tried without success to get the bans in other countries lifted and warned it would examine the German decision. The European Commission sought to force Austria and Hungary to reverse their bans on the crop but its ruling was overturned by a majority of EU nations last month.

– 14/4/09, *Reuters*

Monsanto filed suit against the decision saying Germany's action was an "arbitrary ban" that violated EU rules, but the Braunschweig Administrative Court ruled that the prohibition was justified because "a preliminary assessment" showed the plant raises a potential danger. The law doesn't require "a scientific finding that shows a danger for the environment beyond doubt," the court said in its ruling. "It's enough that new or additional information indicates that humans or animals may be hurt." While there aren't "assured" scientific findings that the corn presents "heightened" dangers to the environment, new studies indicate that it also works against insects other than pests, the court said. The plant's pollen may also spread much farther than previously thought, the judges wrote.

– *Bloomberg*, 5/5/09

Imposing a Business Model

The considerable financial and political clout housed within AGRA provides advocacy and lobbying support at a high global level for reform of global policies dealing with high taxes and tariffs, and coaxing the international community to support AGRA's goals. This includes the provision of 'smart subsidies' to enable poor farmers to make use of the new Green Revolution and gene technologies, as well as external inputs such as agro-chemicals and inorganic fertilisers. Already there is strong support from the International Fund for Agricultural Development (IFAD)

The main focus of AGRA is on crop breeding, in respect of which an ambitious five-year target has been set to develop 100 new varieties from core crops such as maize, cassava, sorghum and millet; however, it is really AGRA's Agro-Dealer Development Programme that is of huge significance and deserving of scrutiny.

Briefly, the program provides training, capital and credit for the establishment of small agro-dealers who comprise the primary conduit of seeds, fertilisers, chemicals and knowledge to smallholder farmers. This is done on the pretext of increasing farm productivity and farmer incomes. AGRA boasts that it is working hard to put in place a special grassroots-based delivery system, where a farmer could 'walk to a shop or kiosk in his rural back yard and readily access high-quality certified seeds,' However, the reality is the establishment of an entire value chain – from 'inputs to markets' – that will pave the way for the emergence of a new rural private sector: agroprocessors and exporters who contract small farmers to produce crops for them.

As a first step towards putting its agro-dealers scheme in place to sell 'improved' seeds, pesticides and fertilisers to poor farmers in Africa, AGRA awarded more than \$15 million to US NGO, Citizens Network for Foreign Affairs (CNFA) to lay the groundwork.

CNFA is led by John Costello, who has a long and successful track record of promoting US corporate interests around the world. . . . Commenting on the agro-dealers programme during November 2008, Costello said 'By building a commercial, enterprise-based network that can deliver inputs and technology to thousands of rural farmers, the CNFA/AGRA partnership will begin to build a rural economic infrastructure, resulting, over time, in expanding rural incomes through improved linkages to essential inputs, technologies and markets.' True to his word, in October 2008, Costello's CNFA joined forces with the Croplife Foundation and announced that they would utilise the AGRA-funded agro-dealers network, comprising 1,500 agro-dealers in Kenya and Malawi, to demonstrate the

potential of agrochemicals. CNFA has brought in financial and technical support for the project from Syngenta Crop Protection, Dow AgroSciences, Bayer CropScience, Du Pont Crop Protection and Monsanto.

Another strategic player in AGRA's agro-dealers scheme is the International Fertiliser Development Centre (IFDC), which received around \$6 million from AGRA's strongbox. Following CNFA's lead, the IFDC has also teamed up with Croplife International. Together, they are demonstrating to smallholder farmers in Mozambique 'how to use more fertiliser and other inputs . . . to expedite their transition from subsistence farming to commercial, quality and maize production marketing.' It is clear that AGRA's agro-dealer scheme is nothing more than a well-oiled machinery to enable large agro-chemical companies, which just so happen to also produce GM seeds, to gain a firm foothold in Africa's agriculture systems.

The imposition of technology and technological solutions to what are inherently social, political, historical and economic crises within African agriculture will drastically transform African rural economies, social relationships, agrarian policies and generally, the rural development trajectory in Africa. Agricultural production in Africa will increasingly be dominated by transnational seed, GMO, agro-chemical and other agribusiness corporations. This will accelerate the destruction of traditional agricultural systems and facilitate the shift towards an externally-oriented, input-based agricultural system.

– *Mariam Mayet, 3/09, African Centre for Biosafety, Melville, South Africa, www.biosafetyafrica.net*

Fumigating Argentina

Once a serene refuge from urban pollution and chaos, the Argentine countryside has now become a place fraught with risks for many local residents. Vast GE (Roundup Ready) soybean fields have replaced the protective green belts that traditionally surrounded rural towns, consisting of family gardens, dairy and small livestock farms, and fruit orchards, leaving local populations exposed to the damages of aerial spraying, says the study.

The massive use of glyphosate on GE soy is creating a "health catastrophe" in the rural sector. A report by the Rural Reflection Group (GRR) points to an increase in health problems in the countryside, such as cases of cancer at early ages, birth defects, lupus, kidney problems, respiratory ailments and dermatitis, based on the accounts of rural doctors, experts and the residents of dozens of farming towns.

The GRR has been carrying out a campaign since 2006 to identify towns affected by the spraying of glyphosate from planes, which may be the most efficient means of application, but means that it also drifts onto nearby populated areas, says the GRR report *“Stop the Spraying.”*
 – *IPS, 4/3/09*



NOT A PRECISION INSTRUMENT

Argentina is the third biggest world exporter of uncrushed soybeans and has the largest soy crushing industry in the world, making it the top exporter of soy meal and soy oil. Soy exports were worth \$16.5 billion last year. More than 17 million acres, half of Argentina's agricultural land, is planted with soy, much of it genetically engineered to be resistant to glyphosate. Argentina consumes an estimated 53 million gallons (200 million litres) a year of glyphosate, including the Roundup brand, produced by Monsanto, and Power Plus and other products of Argentina's Atanor, owned by Iowa-based Albaugh chemicals company.

– *Reuters, 7/5/09*

“Transgenic treadmill”

“The evolution of weed herbicide resistance has neither decreased herbicide use nor increased non-chemical practices, but rather intensified herbicide consumption – the so-called ‘herbicide treadmill’.”

“The increased use of glyphosate is associated with the appearance of a growing number of tolerant or resistant weeds, with socio-environmental consequences apart from the loss of productivity. In 2002, a glyphosate-resistant (GR) biotype of johnsongrass appeared in Argentina and now covers at least 10,000 ha.”

“Johnsongrass is a cosmopolitan perennial grass native to the Mediterranean region, and considered as one of the 10 worst weeds in the world. It was introduced in Argentina in the beginning of the 20th century as forage but by 1936 it was already banned for agricultural purposes. However, due to its highly invasive nature, it continued

spreading and became a key restrictive factor for agricultural production. The technological package associated with Roundup Ready soybeans was believed to control the pest by the mid 1990s. . . Although the first plots with GR johnsongrass appeared in the north of Argentina only in 2002, [Monsanto's technicians only recently reported a GR johnsongrass biotype] it can now be found practically in every agricultural region of the country.”

“The adoption of herbicides . . . in the 1960s, and glyphosate later, has been accompanied by conceptual changes in the definition of weeds and their role within the production system. For some actors, weeds may be considered an intrinsic limiting factor in the agriculturalisation process, the economic impact of which must be minimised; while for others they are an “enemy” to be defeated in the ongoing effort to dominate nature. Among frequently used terms in weed management are “control”, “eradication”, “fight”, “defeat”, “wipe out”, “weapon” and the use of medical metaphors and hygienic terms such as “clean” to refer to a chemically sterilized field.”

“New social forms of production . . . have objectives of net revenue and economic efficiency. In Argentina more than 50% of the cultivated land is leased [and] most of the leasing contracts are annual, which impose a high pressure on the land in order to obtain the maximum revenue in the shortest time. . . 3% of the producers are responsible for 70% of soybean production.”

“As a result of the intensification of the agricultural model, the appearance of GR johnsongrass becomes a driver for further concentration while opening new markets for technology suppliers. Proposed strategies to deal with the situation rely on reactive measures, potentially causing a series of externalities. Impacts of the potential increment of herbicide use on human health and the environment should be further analyzed. The ‘chemical paradigm’ is again the keystone of the strategy. Since new herbicide developments seem to be in a deadlock, two routes can be followed if one wants to stay within this paradigm: either add one of the available herbicides to the glyphosate technological package directly, or incorporate the technology through the seed. In that sense, although aiming to overcome the effects of the previous GR crop generation, this “new generation” of GM crops strengthens the same paradigm. As a new magic bullet, this process may represent a new form of herbicide intensification: the ‘transgenic treadmill’.”

– by *Rosa Binimelis, Walter Pengue, Iliana Monterroso*
 in *Geoforum* (2009 - in press)

We urge you to read this comprehensive article at <http://cta.uab.es/99_recurros/1241769532578.pdf>

Brazil's Coffee Crop Threatened

The future for Brazil's mighty farm sector could be grim, with hotter temperatures pushing crops past its borders, uphill into the Andes and toward the tip of South America. So Brazilian scientists and agronomists are developing genetically modified coffee, soy beans and other crops that can withstand higher temperatures in Brazil's expanding northeastern desert, new pests and diseases and more flooding in low-lying areas.

This year, the scientists are preparing the first large-scale plantings to test the productivity of new genetically modified soy crops at a climate-controlled research station in the southern state of Parana.

Already, the world economic crisis has thrown Brazilian agricultural commodities into a slump, with grain prices plunging on weak demand. But climate change remains an acute long-term concern: The U.N.'s Intergovernmental Panel on Climate Change predicts an increase in global temperatures of 3.6 to 7.2 degrees in the next 20 years, with even greater temperature increases in the Amazon.

That could mean a 10% reduction Brazil's arable land for coffee by 2020 — and a one-third reduction by 2070 — as the crop's suitable climate migrates into the

Andean foothills of neighboring Argentina. Brazil's coffee plantations extend across 5.7 million acres and produce more than twice as much as the next-largest grower, Vietnam.

Brazil's soy crop, the largest outside the USA, would lose an estimated 20% of its cultivatable land by 2020. Beans, corn, sunflower, cotton are among other crops that would suffer a similar retreat due to high temperatures, the Embrapa study found.

"What we are doing in Brazil is adapting, anticipating what is to come," Assad said. "We've been working on this for two years, and we are going to need five or 10 years to be prepared." — AP. 19/02/09

Editors' note: The 'spring flush' of excellent research papers we have received recently includes, in addition to the two research articles we have excerpted in this issue, excellent papers on "Foreign investment in agricultural land and water": www.iisd.org/pdf/2009/thirst_for_distant Lands.pdf

and

"Marker Assisted Selection" in plant and animal breeding: www.biosafetyafrica.org.za/index.php/20090521225/MAS-Key-Issues-for-Africa.-Author-William-Stafford/menu-id-100025.html



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