



# THE RAM'S HORN

A MONTHLY NEWSLETTER OF FOOD SYSTEM ANALYSIS

No. 274, June-July 2010

ISSN 0827-4053

## Standards and Food System Colonization

by Brewster Kneen

The media is fond of proposing a contradiction between local and certified organic and suggesting there is a debate as to which is better. (The correct answer is, 'both'.) Now we are seeing products being certified as 'local' to facilitate sales to institutions, retailers, and restaurants who are unable or unwilling to devote the time and energy required to build relationships with many suppliers. It's a short-cut, designed to exploit the increasing value many people are placing on a relationship with the people who grow their food. Such certification, however, changes the relationship as it places trust, not in personal experience of the grower and her or his methods, but in the certification process itself.

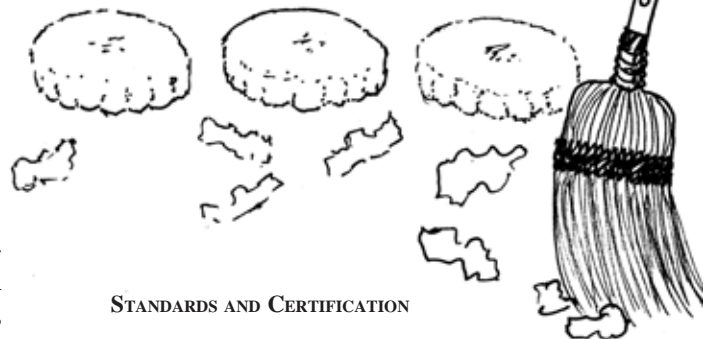
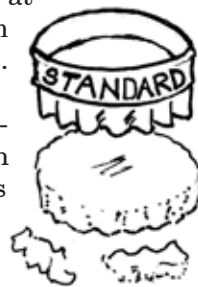
We started to buy meat from John Rowe at the St. Lawrence Market when we left the farm in Nova Scotia and moved to Toronto. John's beef was almost as good as what we had raised ourselves! His business grew because he was trusted to deliver what he said he was delivering by way of quality – quality of life for the animal and quality of the meat from it as a result – whether the animals were cared for on his farm or someone else's according to his principles. The trust was in John's personal integrity, and customers were encouraged to visit the farm. In fact, several times I helped John with his annual farm open house by driving visitors around the farm through the fields on an open wagon, and I got quite good at telling stories about everything from apples to cow pats and their benefits.

It seems to me there is a distinction between the principles on which John built his 'brand' and the process of standard-setting and certification. The 'local' tag itself does call up trust, as well as recognizing not only the importance of minimal distancing (including all forms of transport) and the health of the community and region. Behind this, though not perhaps generally discussed, lies the importance of local knowledge and practice. Standards, on the other hand,

emphasize abstract, remote expert knowledge, the kind that the Canadian Food Inspection Agency is supposed to have – think about standards for food handling, including abattoirs. One of the consequences, perhaps unintended but certainly not opposed by the CFIA and other regulators under neo-liberal regimes, is the increasing control exercised by the major corporate players in the global system as they convince suppliers and buyers that they have to play their game, and that since there is no trust in the system, there has to be standards and certification.

"The logical companion to a complete faith in a quasi-industrial model of high-modernist agriculture was an often explicit contempt for the practices of actual cultivators and what might be learned from them." (*James C. Scott, Seeing Like a State, Yale 1998*) Standards, by their very nature, also have to reduce or eliminate diversity. Otherwise they are meaningless. They have to eliminate diversity because it is simply not possible for a central agency or authority to know about and recognize the incredible variety of local practices, and the knowledge accompanying them. Standards can only allow for a very limited amount of deviation or exception, and can certainly not take into consideration local weather conditions from place to place and year to year. Local knowledge, on the other hand, has no limits and can take in an immense diversity of social and ecological life.

...continued next page



STANDARDS AND CERTIFICATION

The rise of Experts with their abstract 'information' and their standards is naturally accompanied by the degrading and dismissal of local practitioners and their experience and knowledge. So the consultants – the experts – that farmers now have to draw on are largely in the employ of giant agribusiness firms selling seeds and agrotoxins and/or contracting for crops, not agronomists employed by public agencies such as provincial departments of agriculture (for better or for worse).

We may be tempted to think that we all establish standards – our own standards that we would like to live up to, or the quality standards which we apply to goods and services and so on. But these are not codified, nor are they universal. John Rowe's requirements of the farmers he worked with were on the principles of good animal husbandry, not detailed standards of care. Then there are community standards, the expectations of a community about how its members should behave. These may become codified in rules and even laws, but still they are not considered universal and the community may well decide, from time to time, to change them to reflect current community values. Think, for example, of the current debates about appropriate dress, or gay marriage, which reflect the process of changing attitudes.

There are also standards which may originate with the public, like the new Canada Organic Standard, but which when enacted have the enforcement power of the state behind them. When there is an earthquake we are powerfully reminded that there are building codes and construction standards, again with state enforcement behind them. These are all state-backed public standards, standards in the public interest, for the public good.

But there is, increasingly, another category of standards that originate in and are enforced by the private/corporate sector not in the public interest, but to serve their own profit interests. Such standards on the global level are those of the Roundtable on Sustainable Soy, the Roundtable on Responsible Palm Oil and similar commodity production and trade standards. These so-called standards of responsibility, endorsed, distressingly, by environmental organizations such as World Wildlife Fund, may cover up the growing of genetically engineered crops as vast monocultures, the massive use of agrotoxins, and the poisoning and displacement of small-scale and subsistence farmers and their communities.

There is also an increasing number of national and regional corporate standards, often associated with brand names. All of these may be claimed to be certified, but it behooves the public to question the

actual meaning of this, since such certification may be little more than a marketing tactic, such as with 'responsible soy' or 'responsible palm oil'.

Standards for forest stewardship and Fair Trade standards and certification represent something of a hybrid: they bear similarities to the marketing/brand standards of the corporate sector, including retailers such as Loblaws, as well as standards of a more public character, such as organic standards, which benefit both producer-suppliers and final purchasers and users.

### **Forest Stewardship Council**

"The standards that are developed by the FSC are at the core of all of the work that we do. These standards . . . describe various aspects of good forestry. What makes them standards is that they describe specific requirements that can be consistently and reliably audited by an independent certifier."



" . . . The FSC Principles and Criteria describe how the forests have to be managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. They include managerial aspects as well as environmental and social requirements."

– [www.fsccanada.org](http://www.fsccanada.org)

### **Fair Trade Certification**

An international system of Fair Trade certification and labelling began to emerge in the late 1980s, "when consumers wanted a guarantee that their purchases were truly benefiting producers and workers, and businesses selling Fair Trade products were eager for a system that engendered consumer trust. Standards were developed to clearly define the obligations for producers and businesses who buy from them . . . and a rigorous third-party monitoring system was implemented to ensure standards were being met. Finally, a label was created that would appear on products that had been independently Fair Trade Certified."



"Fair Trade producers are usually democratic associations of small-scale farmers who grow the raw ingredients in Fair Trade Certified products and who have to meet a variety of criteria that focus on a range of areas including labour standards, sustainable farming, governance, and democratic participation."

– [www.transfair.ca](http://www.transfair.ca)

## Certified Organic

The principles behind organic certification are laid out nicely by the Certified Organic Associations of BC:

“COABC’s approach to food production is based on care for the earth. We recognize that as human beings, we are one creature among many that are all inter-related and interdependent. We are part of an organic movement that embraces a wide diversity of activities and enterprises related to the organic production of food and encompasses all sizes of operations. While one of the tools we use is a regulatory framework to permit exports, our priority is the establishment and maintenance of local food systems. We accept the principles of organic farming and processing identified by the International Federation of Organic Agricultural Movements (IFOAM) and engage in research of appropriate techniques to enable us to put them all into practice.”

– [www.certifiedorganic.bc.ca](http://www.certifiedorganic.bc.ca)



There is nothing in this statement about standardization, but plenty about diversity!

In *Seeing Like a State*, Scott explores the question of how the emerging modern state gradually got a handle on its subjects and their environment:

“Processes as disparate as the creation of permanent last names, the standardization of weights and measures, the establishment of cadastral surveys [mapping the value, extent and ownership of land for purposes of taxation] and population registers, the invention of freehold tenure, the standardization of language and legal discourse, the design of cities, and the standardization of transportation seemed comprehensible as attempts at legibility and simplification. In each case, officials took exceptionally complex, illegible, and local social practices . . . and created a standard grid whereby it could be centrally recorded and monitored.

“The organization of the natural world was no exception. Agriculture is, after all, a radical reorganization and simplification of flora and fauna to suit man’s goals. Whatever their other purposes, the designs of scientific

forestry and agriculture and the layouts of plantations, collective farms . . . and strategic hamlets all seemed calculated to make the terrain, its products and its workforce more legible – and hence manipulable – from above and from the centre.”

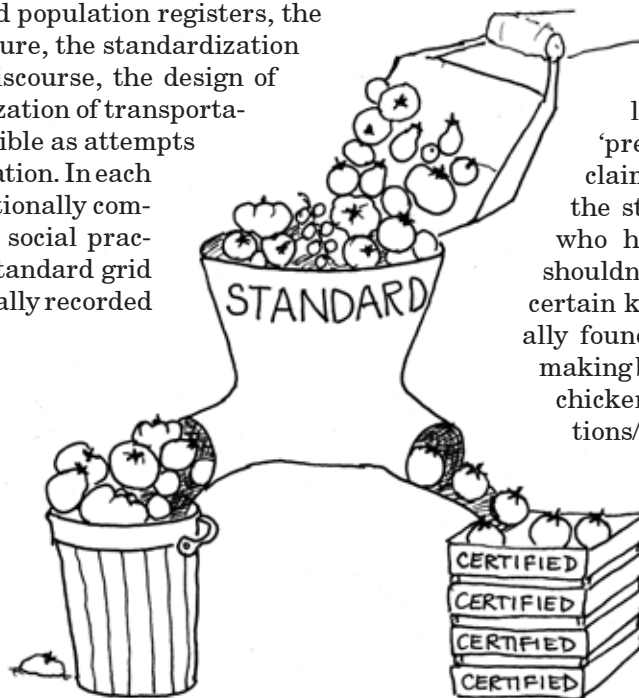
This process, of course, required the overwhelming – or overpowering – of diversity, whether of forests and fields, local customs, names, units of measurements, patterns of land holding and settlement, languages, or knowledge itself. On the other hand, it also brought in systems of public health, education and public transportation.

So are standards a good thing? Certainly if you are a believer in ‘development’, industrialization and progress as universal ‘goods’, the elaboration and enforcement of standards are an essential component of this process. If, however, you share our skepticism (to put it mildly) about development and progress, and our certainty that any healthy society rests on a foundation of diversity and trust, then standards, of almost any sort, must be regarded as stop-gap measures while we rebuild our societies on the basis of respect, rather than fear and distrust.

Such stop-gap measures are, as our daughter Rebecca points out, necessary to ensure that claims are legitimate and third-party sales can be trusted, even while we work to reduce the distances between food providers and eaters. They also serve an educational purpose: the organic standards have been a tool of farmer education as much as anything else in the past, giving people a way to understand what ‘natural animal behaviour’ actually looks like, for example.

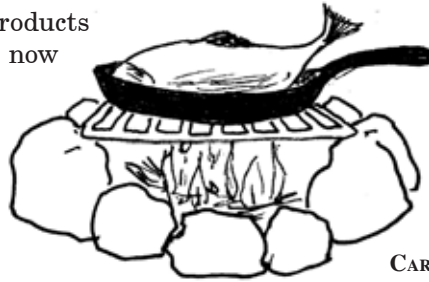
Rebecca adds: “I’ve met a lot of farmers who say they are ‘pretty much’ organic, and make the claim verbally, but who have never read the standards or any other guide, and who have no idea what they should/shouldn’t be doing (apart from avoiding certain kinds of chemicals). I have personally found the standard a useful guide to making better compost, designing a healthy chicken run, and ensuring solid crop rotations/weed control practices.”

– Rebecca Kneen farms at Left Fields and is a partner in Crannóg Ales in Sorrento, B.C.



## Climate Certification of Food

Sweden is in the process of implementing a Climate Certification Standard. A third version has just been released. It includes standards for just about every food category, including dairy, fisheries, aquaculture, greenhouses, processing, packaging, transport and imports. The Swedish certification association KRAV has implemented its standards for greenhouses and for fisheries since January 1, 2010 and the first products fully produced to these standards are now reaching the market. These include tomatoes, cucumbers, capsicum, herbs and fish such as cod, herring and mackerel. A new report demonstrates that these standards reduce the GWP of frozen cod by more than 50%.



CARBON NEUTRAL?

## Fresh Fish CSA

Meanwhile, CBC News reports that a group of Nova Scotia fishermen have set up the first direct-to-buyer fish co-operative in Atlantic Canada. Off The Hook will make weekly deliveries of fresh haddock, hake or pollock directly to subscribers who pre-pay for the season. The price is about the same as fish costs in the stores, but the

fish is absolutely fresh and all the money goes to the fishermen, who have been suffering low prices for groundfish for years. "I will be able to go and make a small living if I can get people to believe in the quality of my product," said Beau Gillis, an in-shore fisherman in Digby County.

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## US Supreme Court Decision on RR Alfalfa

While Monsanto Canada says they have no intention of introducing Roundup Ready alfalfa any time soon, there is no reason to believe them. Nor is there reason to think that the CFIA would be any more hesitant to approve RR alfalfa than the US Dept. of Ag. More relevant for Canada as well as the USA is the first-ever US Supreme Court case on genetically engineered crops (Monsanto Co. v. Geertson Seed Farms) that resulted in a complicated 7-1 decision on June 21st.

Monsanto trumpeted the decision as a victory, but The Center for Food Safety which acted on behalf of the plaintiff in the case says that despite what Monsanto is claiming, the ruling isn't even close to the victory they were hoping for. "Generally speaking, Monsanto asked the Supreme Court to rule on three main issues: (1) to lift the injunction on GMO alfalfa; (2) to allow the planting and sale of GMO alfalfa; (3) to rule that contamination from GMO crops not be considered irreparable harm."

While the Supreme Court ruled in favour of Monsanto in agreeing that the nationwide injunction was too drastic, The Center for Food Safety claimed victory in several other ways: "most importantly, the High Court did not rule on several arguments presented by Monsanto about the application of federal environmental law. In addition, the Court opinion supported the Center's argument that gene flow is a serious environmental and economic threat. This means that genetic contamination from GMOs can still be considered harm under the law, both from an environmental and economic perspective."

—Center for Food Safety, 22/6/10

**Background:** In 2005, the US Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) deregulated Roundup Ready alfalfa – otherwise known as a Finding of No Significant Impact – without preparing an Environmental Impact Statement. The agency did not place any limits on the planting, harvesting, or sale of the seeds. In response, Geertson Seed Farms, along with The Center for Food Safety and a group of conventional and organic farmers, filed suit in federal district court, specifically citing violations of the National Environmental Policy Act, the Endangered Species Act, and the Plant Protection Act. The court ruled in favor of Geertson, issuing a permanent injunction prohibiting the sale of Roundup Ready Alfalfa until APHIS prepared a full Environmental Impact Statement. The decision was upheld in an appeals court. Monsanto then appealed to the US Supreme Court, arguing that the permanent injunction was inappropriate because it presumed irreparable harm based on the government's failure to complete the impact statement.

The Supreme Court decision has led more than 50 members of the US Congress to call on the US Agriculture Secretary Thomas Vilsack to keep Monsanto's biotech alfalfa out of farm fields. They say GE alfalfa presents too great a risk to conventional and organic agriculture to ever allow it. "We believe that the broad regulatory authority available to you has been ignored, in order to justify deregulation of a biotech crop that has limited utility to anyone except the manufacturer." They have asked Vilsack to ensure that Monsanto's genetically engineered alfalfa is not approved for commercial use. It would be very nice if Canadian parliamentarians would follow suit.

A similar case involving Monsanto's biotech sugarbeets, was slated for a court hearing July 9, but the judge in that case has postponed the hearing until mid-August to give all parties a chance to study the Supreme Court ruling. The court has already ruled the sugarbeets were approved by USDA without proper environmental review and is considering a permanent injunction.

Andrew Kimbrell, executive director of the Center for Food Safety, says the USDA needs to focus on the well being of US consumers and agriculture, and not Monsanto: "Their job is to protect US agriculture, not to protect Monsanto."  
—Reuters, 23/6/10

The Canadian Seed Trade Association will not take a position, according to Bill Leask, executive vice-president. The Canadian Food Inspection Agency's plant biosafety office approved GE alfalfa as safe for food, feed and environment in 2005, but Leask says there are no registered varieties that contain it."

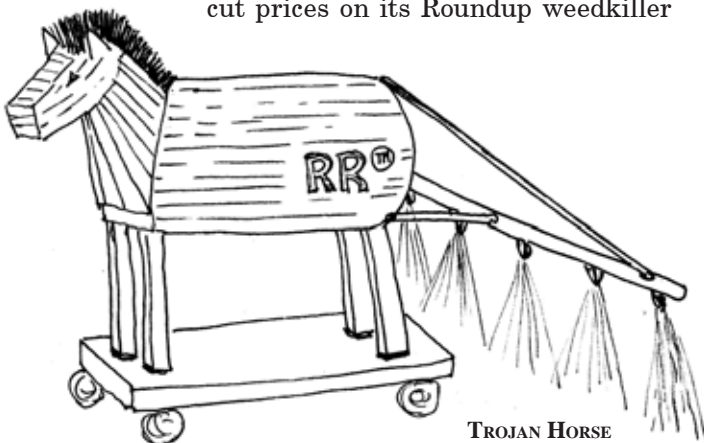
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## The cost of doing business

Monsanto spent \$2.46 million in the first quarter to lobby the U.S. government on proposed changes to U.S. patent law and other agricultural issues that could affect the world's largest seed company, according to a disclosure report.  
—Business Week, 22/6/10

Over the long haul, Monsanto strategy has not changed. Roundup was just the Trojan Horse, and a very strong one at that. Actually, it was hydra-headed as it was the weapon used to colonize country after country with genetically-engineered, patented seeds. Functionally, Roundup paid the bills for the company's wooing of farmers and their governments and the investments made in generating the hordes of seedy occupation forces.

Now Monsanto has been forced to cut prices on its Roundup weedkiller



due to intensifying competition from generics, including large quantities from China. "Systemic margin compression" Monsanto calls it, claiming its rivals, particularly in China, are selling their versions of Roundup at a loss.

In fact, Monsanto was reaping huge profits from its patented and vastly overpriced herbicide. In its fiscal year ended Aug. 31, 2009, Monsanto's glyphosate-based herbicide business generated \$1.8 billion in gross profit on sales of \$3.5 billion, in spite of the fact that its patent expired in 2000. (Its high price is maintained by the contractual link requiring its use with the company's GE seeds.) According to Monsanto, the retail price of a gallon of generic glyphosate has dropped to the \$10 to \$12 range, as much as \$4 below what farmers had been paying for nearly a decade, and the company expects glyphosate prices to settle at between \$8 and \$10 a gallon.

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## GM crop 'approval' – or not

(Three stories from page 4, Western Producer, 10/6/10)

### Canola Council strongly opposes market access bill

What the Canola Council opposes is MP Alex Atamanenko's private member's bill, C-474, which calls for a thorough assessment of the potential market consequences of the introduction of GE crops as part of the regulatory (what is called by the CFIA the 'approval') process. In other words, if production of GM crops is going to hurt the marketability of the crop in general, don't approve them in the first place.

### Low level GM tolerance needed to improve trade

What the Canola Council wants is for Europe to lower its standard for acceptance of designated non-GE crops. In other words, the Canola Council wants Europe to accept a higher degree of GE contamination in imported crops, such as canola, soy and flax – as if Europe were about to accommodate the biotech industry and the organizations sharing its mentality.

### Seed growers fear GM contamination

Seed growers, on the other hand, are rightfully concerned about the effects of GE contamination of seed stocks. Seed industry officials recognize the need to address the issue before it disrupts the global seed trade, worth an estimated \$37 billion annually. They know that once a GE crop is out there, virtually all the seed for that crop will sooner or later be contaminated. This is the major lesson of the proliferation of GE canola and the Triffid flax experience. However, the seed industry does not appear to be overly concerned about the effects of GE on biodiversity.

## Superweed Arms Race

It is not news that superweeds immune to glyphosate (Roundup) are invading fields of GE corn, soy and cotton fields in the US, where farmers now using 'Roundup Ready' crop varieties for 90% of the soybeans and 80% of the corn grown in the US. What is news is that the agrotoxin makers are preparing a counterattack against the invaders – such as pigweed, horseweed and Johnsongrass – that have developed immunity to glyphosate. To keep the toxic treadmill moving, the chemical companies are recalling to duty their reserve troops – their older, more toxic herbicides – and engineering crop varieties that will enable farmers to spray them liberally with these seasoned toxins. Dow, DuPont, Bayer, BASF and Syngenta are together spending hundreds of millions of dollars to develop genetically modified soybean, corn and cotton seeds that can survive such attacks.

“It will be a very significant opportunity” for chemical companies, says John Jachetta, a scientist at Dow Chemical’s Dow AgroSciences and president of the Weed Science Society of America. The chemical companies are betting that farmers will buy more of their herbicides, and will pay big premiums for the new seeds. Dow AgroSciences manufactures 2,4-D, a powerful herbicide introduced nearly 65 years ago. The company hopes to be selling 2,4-D resistant corn by 2013.

“The herbicide business used to be good before Roundup nearly wiped it out,” says Dan Dyer, head of soybean research and development at Syngenta. “Now it is getting fun again.” – *WSJ*, 4/6/10

## Pre-Polluted Infants

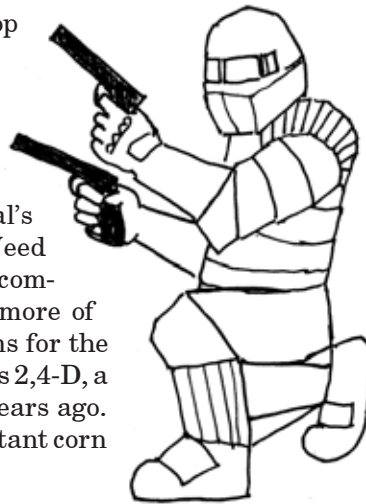
The US President’s Cancer Panel, in a 200-page report in May, warns that our lackadaisical approach to regulation may have far-reaching consequences for our health. “It suggests . . . giving preference to organic food, checking radon levels in the home and microwaving food in glass containers rather than plastic. In particular, the report warns about exposures to chemicals during pregnancy, when risk of damage seems to be greatest. Noting that 300 contaminants have been detected in umbilical cord blood of newborn babies, the study warns that to a disturbing extent, babies are born ‘pre-polluted.’ The report blames weak laws, lax enforcement and fragmented authority, as well as the existing regulatory presumption that chemicals are safe unless strong evidence emerges to the contrary.”

– *NYT*, May 5/5/10

## Summer Reading

***Losing our Grip: How a Corporate Farmland Buy-up, Rising Farm Debt, and Agribusiness Financing of Inputs Threaten Family Farms and Food Sovereignty*** (29 pages, including 166 references) available at [www.nfu.ca/land\\_report](http://www.nfu.ca/land_report)

It’s not your average bedtime reading, but we are grateful to Darrin Qualman and the National Farmers’ Union for this well-researched and well presented document. It’s the kind of hard analysis, based on solid data, that is virtually absent from the government bodies developing agricultural policy, which goes far to explain why government policies seem to serve public interests so poorly and the interests of capital so well.



BOYS JUST WANNA  
HAVE FUN

This paper focuses on privately held/owned land where it is assumed that land is to be treated as a commodity, however much the attitude of traditional farmers may take issue with this. In so doing, it illustrates the urgent need to explore the multitude of non-commodity relationships to land. Such an exploration could well start with serious consideration of how we regard and relate to land if we said “Mother Earth” and really meant it.

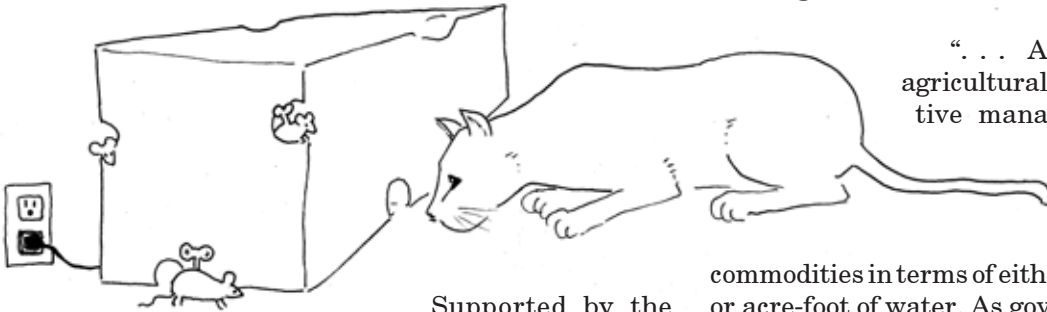
Another new paper discusses the ***“Politics of Global Land Grabs”*** and provides a very thoughtful analysis of the wide variety of “land property relations” – transfers, leasing, redistribution, expropriation purchase etc.– that get lumped together as “land grabs.” The authors, Saturnino M. Borrás and Jennifer Franco, provide a very helpful grid and discussion of the character, direction and orientation of land use change. Their aim is to identify what is actually taking place on the ground where real social relations are by and large ignored and overridden by the preoccupation with privatization and land titling as required by ‘investors’.

This paper is posted on our website under Documents.

“Haiti is not a poor country and Haitians are not a poor people. Haiti is the result of a process of exploitation of nature and of peoples. Haiti therefore is an impoverished country, and Haitians are impoverished peoples.”– *Marta Benavides, El Salvador*

## Real Cheese?

Last year two small Ontario cheese makers, St. Albert Cheese of St. Albert, Ontario, and International Cheese of Toronto, appeared before the Judicial Review of Canada's cheese regulations, to argue that Canadian cheese should be made with Canadian milk, not cheap imported 'modified milk ingredients' such as milk protein concentrates, which allow Saputo, Kraft and Parmalat to undercut the prices of quality cheese-makers like St. Albert and International. As a 'Canadian' company, we would expect more from Saputo than from Kraft and Parmalat, neither of which are known for their ethical standards.



Supported by the testimony of St. Albert and International Cheese, the Federal Court of Canada, in its fall 2009 ruling, upheld Canada's new cheese regulations specifying the amount of fluid milk to be used in the manufacture of Canadian cheese (Canadian Cheddar: 100%, soft cheeses: 95%, cheddar, Colby, and brick cheeses: 83% and mozzarella: 60%.) Saputo and Kraft appealed the finding and a final decision is expected in July.

Saputo began as a Montreal mozzarella-maker in 1954, opening its first company-owned cheese factory in Montreal in 1957. It began a period of expansion in 1981 and bought up and shut down many Canadian dairies, including companies in Harrowsmith, Cookstown and Oakville, Ontario; Yorkton, Saskatchewan; Souris, Manitoba; and milk plants in Calgary and Armstrong, B.C. In 1988 Saputo entered the US market with acquisition of two cheese companies. With the purchase of US-based Stella Foods in 1997, Saputo tripled in size. It then bought Culinar, the leading maker of snack cakes in Canada, in 1999, and became largest dairy processor in Canada two years later with acquisition of Dairyworld Foods from Agrifoods Intl. Since then it has added the US cheese division of ConAgra Foods and entered the global market with the acquisition of Molfo Hermanos, the third largest dairy in Argentina. Its most recent acquisition was the purchase of Neilson Dairy from George Weston Ltd in 2008. Saputo Inc. is now the largest dairy processor in Canada and 11th largest in the world.

– with thanks to Wendy Holm, [www.theholmteam.ca](http://www.theholmteam.ca)

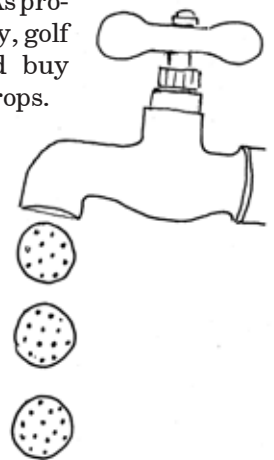
## Golf Courses = Agriculture

"The definition of agriculture changes over time. Agriculture is the cultivation of plants and husbandry of animals, that is, the management of living things and ecosystems to produce goods and services for people. Maintenance of a golf course entails intensive cultivation of turfgrasses and other plants to enable consumers to play and practice golf. Under this, golf course maintenance is part of agriculture and golf courses are types of modern agricultural enterprises. Food, fiber, fodder, and fuel are well recognized agricultural goods, but fun, or an outdoor venue for it, is not well recognized as an agricultural service.

"... A broad perspective on the agricultural sector is crucial for effective management of California resources. Turfgrass and other plants on golf courses are one of California's highest-value

commodities in terms of either revenues per acre of land or acre-foot of water. As governments establish principles to allocate water and land resources among various activities, golf courses should be allowed to compete. Allocation of water away from low-value uses to golf course maintenance and other high-value uses could enable those who gain the water to compensate those who sacrifice their losses, and still be better off than they would have been without the reallocation. Establishment of water trading could enable people to voluntarily make these reallocations. As producers of a high-value commodity, golf course superintendents would buy water from farmers of low-value crops.

Similarly, future expansion of the golf sector as population ages globally may be an opportunity to increase value added derived from California's resources." – from the *Gianini Foundation of Agricultural Economics, Univ. of California*, [www.agecon.ucdavis.edu/extension/update/articles/v13n3\\_3.pdf](http://www.agecon.ucdavis.edu/extension/update/articles/v13n3_3.pdf)



This seems to us like a logical extension of the push to agri-tourism. Heaven forbid that we should actually value food, nourishment, and food providers! Far better to turn farmers into what one BC vegetable grower calls "song-and-dance men" – after all, there's more money in that. And money (a.k.a. "high-value use") seems to be all that matters.

## 'Balanced' ecosystems control pests

Washington State University researchers writing in the journal *Nature* have found that more balanced animal and plant communities typical of organic farms work better at fighting pests and growing a better plant. The researchers looked at insect pests and their natural enemies in potatoes and found organic crops had more balanced insect populations in which no one species of insect has a chance to dominate. And in test plots, these crops grew better.

"I think 'balance' is a good term," says David Crowder, one of the researchers. "When the species are balanced, at least in our experiments, they're able to fulfill their roles in a more harmonious fashion."

Researchers at WSU and at the University of Georgia use the term "evenness" to describe the relatively equal abundance of different species in an ecosystem. Conservation efforts more typically concentrate on species richness—the number of individual species—or the loss of individual species. The researchers say their results emphasize that both richness and evenness need to be considered in restoring an ecosystem.

Conventional pest-management on farms often leads to biological communities dominated by a few species. Looking at conventional and organic potato farms in central Washington State's Columbia Basin,

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Crowder found that the evenness of natural pests differed drastically between the two types of farms. In the conventional fields, one species might account for four out of five insects. In the organic fields, the most abundant species accounted for as little as 38% of a field's insect predators and enemies.

Using field enclosures, Crowder recreated those conditions using potato plants, Colorado potato beetles, four insect species and three soil pathogens that attack the beetles. When the predators and pathogens had similar numbers, "we would get significantly less potato beetles at the end of the experiment. In turn, we'd get bigger plants."  
— *Biology & Nature*, 30/6/10

A friend comments from PEI: "I can vouch for this. A commercial potato grower rented land on my road for a few years. Those were the only years my neighbours and I were plagued with Colorado Potato Beetles. His fields were infested, even after spraying pesticides multiple times. Now that he's gone, we're back to not even thinking about potato beetles. I mulched mine with straw today – the toads, spiders and ground beetles love it."

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Published 10 times a year by  
Brewster and Cathleen Kneen  
2746 Cassels Street  
Ottawa ON, K2B 6N7, Canada  
phone: (613) 828-6047

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