



THE RAM'S HORN

A MONTHLY NEWSLETTER OF FOOD SYSTEM ANALYSIS

No. 126, May, 1995

ISSN 0827-4053

It was developed by the U.S. military in the early 1970s and used with deadly precision during the Gulf War. Now Global Positioning Satellite (GPS) technology has come to the farm with a kinder, gentler purpose. Ariel applicators are starting to use GPS as a means of marking where they have sprayed, a move that could eliminate their reliance on ground crews and other marking systems.

'This is the same technology the U.S. military used during the Gulf War to locate their target and fire their missiles,' said the president of the Saskatchewan Agricultural Aviation Association. 'This is just a much more healthy use for it.'

GPS relies on a satellite signal to guide the spray plane up and down the field, using a network of 24 to 27 satellites in orbit around the earth to accurately plot the spray planes location. The cost to equip one plane is about US\$30,000.

(source: Manitoba Co-operator, 27/4/95)



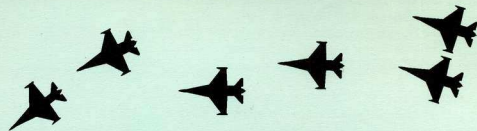
The Militarization of Agriculture

"Defense industry-based high technology will be forced on farmers..."

An involuntarily-retired Wisconsin dairy farmer, driven from his farm by the policies of industrial agriculture, ("score another point for agri-efficient farm policy -- it got rid of another inefficient farmer" he wrote), sent us an article from Farm Industry News (May-June 1995). He suggests that the visions the author reports of agriculture in the U.S. in the year 2000 reflect the militarization, not just the industrialization, of agriculture:

▶ *Industrialization of farming: Economic forces currently in place will speed up the rate of consolidation in farming to a lightning blur. Cash grain farmers will be contracting grain, not just for feed and food, but for industrial uses as well. Commodities will diminish in importance and be so cheap it may take 10,000 acres to make a living.*

▶ *Corporate hog farming: There is a likelihood that fewer than a half-dozen corporations will control all of this country's hog production. Genetics, feed and processing will be owned, patented or otherwise proprietary so individuals outside the loop won't be able to get their hands on the technology needed to produce the pork consumers will demand. Individuals, even cooperative operations, won't have the capital to compete. These economic forces are so strong, we're told, that nothing will reverse or slow these trends short of law. [emphasis added]*

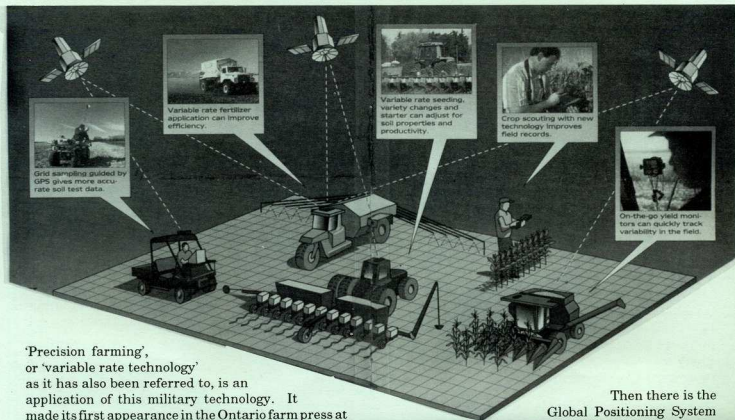


▶ *Technology explosion: Defense industry-based high technology will be forced on farmers for two reasons: One, it will be touted as a survival tactic as farmers continue to squeeze even more efficiency out of their operations. Two, more and more technology will emerge as the defense industry goes 'public' from the lack of Cold War incentives. Items: satellite-based technology, sensors in your growing crops, robots, two-way 'live' communication and conferencing, a blizzard of personal computer-based interactive information. Technology will develop so rapidly you will have to adopt or die.*



And when they make a long blast on the ram's horn, then all the people shall shout with a great shout: and the walls of the city will fall down flat.

- Joshua 6:5



'Precision farming', or 'variable rate technology' as it has also been referred to, is an application of this military technology. It made its first appearance in the Ontario farm press at the end of 1994 and has been featured more frequently this spring in North American agribusiness publications. This new technology, besides being one answer of what to do with military hardware, is an attempt to overcome what has been lost with the industrialization of agriculture: proximity of the farmer to the land. It used to be — and for the vast majority of the world's farmers still is — that the farmer walked the land behind a team of horses or oxen, or worked it with a hoe. It was hard not to get intimately acquainted with the land one worked. But when a farmer is sitting in the cab of an air-conditioned 250 horsepower articulated four wheel drive tractor, there is no way, without frequent stops or some electronic gadgetry, to have any idea of the condition of the ground being 'worked'.

One component of this new 'technology', called grid soil sampling, "divides a field into small, more uniform areas, usually three to four acres each. A computerized field map is created with the results of soil samples from these grids. This map later guides application equipment through the field."

I just love the notion of "small uniform areas" about the size of most of the fields that we worked for fifteen years in Nova Scotia and about twice the size of the vast majority of farms in the world. I never found much uniformity in any of our 4-5 acre fields. This same article (from Land O'Lakes, Inc., in Minnesota) mentions one piece of equipment designed to utilize these grid maps: variable-rate fertilizer spreaders at \$250,000 each.

Then there is the Global Positioning System (GPS): satellites are used in conjunction with a ground positioning satellite guidance system which is mounted on the cab roof of a tractor or combine. The satellites pinpoint the exact location of the equipment in the field and this information is combined with the information supplied by sensors mounted in the combine that measure yield and record this in conjunction with field location on a continuous basis. Subsequently this information can be used in conjunction with soil tests to control the application of fertilizer or seed with similarly controlled equipment.

One report on this military technology explained why such a system would be a valuable aid to farmers (it did not provide any estimates of cost, though another article suggested \$12,000 or more): "Most fields are not uniform in their nutrient content or production capability. Grid mapping allows you to fine tune your production program. Fields are mapped using GPS and soil sampled on a hectare basis. Fertilizer and other inputs are applied according to the soil test using variable rate technology."

A Cargill agronomist, in another issue of the same paper, concluded a brief description of this technology with these words: "Precision farming is what our forefathers did when they knew which of their ten-acre fields would grow corn or oats the best. Now you can do the same while still maintaining the use of large equipment, large farms and modern technology."

THERE ARE MANY WAYS OF ELIMINATING DIVERSITY . . .

In response to the last issue of *The Ram's Horn* on cultural diversity and the plight of the Amish in Ontario, another Wisconsin dairy farmer, Francis Goodman, wrote to us:

"My brother and I are planning to begin the three-year process to be certified organic. There is a waiting list to ship milk to the Coulee Region Organic Produce Pool but ultimately I think it's the only sensible way to farm. We need the satisfaction of doing things the right way since the financial rewards are not there any longer. The challenge of controlling weeds naturally seems to add some excitement to farming again. Anyone can fill a tank with chemicals and kill plants."

Francis also wrote to us that many Amish are moving into their area of Wisconsin because the hilly area lends itself well to their way of farming. "Most of us are very glad to see them come and take the small abandoned farms and in some cases split up the larger operations that went under. The Wisconsin Department of Agriculture, however, is taking the same approach as the milk board in Ontario [see *The Ram's Horn*, #125] and trying to close them down for not having hot water in the milk house. Some Amish here do have bulk milk tanks and pipeline milkers all ingeniously powered by gas engines. They are very good neighbours to have."



Along with his letter, Francis sent a page from a local paper which tells a different story. It seems that the Amish settlers in Wisconsin are being treated as non-persons in the same way as the native Innu in Nitassinan (Labrador) whose lives and culture are being destroyed by low-level NATO training flights over their territory. Another relic of the Cold War, this training continues to prepare NATO pilots for war against the Soviet Union (which, of course, no longer exists).

Amish residents in western Wisconsin are facing a different type of persecution than their ancestors did 300 years ago in Europe when they were forced to move from place to place to survive.

They found a permanent home and religious freedom in Pennsylvania, where the law guaranteed "that no person ... who professes him or herself 'Obliged in Conscience' to live peaceably and quietly under civil government, shall in any case be molested or prejudiced for his or her conscientious persuasion or practice."

Now they fear a different type of disturbance to their way of life. It comes from the U.S. government, which plans to create a high-speed, low-flight warplace corridor over the area where the Amish quietly practice their beliefs.

The government proposal calls for planes to fly as low as 100 feet above the ground at speeds of 600 miles per hour. More than 2,100 such flights would take place annually.

Cultural and Biological Diversity

In mid-May I had the pleasure of attending the Annual Meeting and Study Session of Agricultural Missions, held at the farm of Seed Savers Exchange, located near the small town of Decorah in the northeast corner of Iowa. We had the pleasure of being the inaugural group for SSE's handsome new conference facilities, built by craftspeople from a nearby Amish community.

AgMissions, as it is called, is a 65-year old agency of the churches in the United States (and including the United Church of Canada) that supports small-scale farmers and indigenous peoples around the world. The three-day study session focused on the conservation of plant genetic diversity, indigenous and traditional knowledge,

and the application of patenting to life forms. The location of the meeting was ideal for the subject matter.

Seed Savers Exchange, founded in 1975 by Kent and Diane Whealy, is a living gene bank, a network of over 1000 members who grow, save and exchange over 10,000 "unique varieties" of open-pollinated "heirloom" vegetable seeds, thus ensuring their survival. In its 392-page catalogue there are 17,683 total seed listings (some members' listings overlap, hence the difference between listings and unique varieties).

Seed Savers Exchange is also the farm where nearly 13,000 rare vegetables are maintained: 3500 beans, 3000 tomatoes, 650 peppers, 500 lettuces and more. About 1200 varieties of these are grown out



annually for both conservation and exchange. While there are about 5000 varieties of open-pollinated vegetable seed available through commercial seed houses, SSE altogether has about 22,000 varieties. The farm in Decorah is also home for a breeding herd of White Park Cattle, a very ancient British breed, and an orchard with about 700 varieties of old-time apples. (In 1900 there were 7000 varieties of apples in the U.S., but 5000 are now extinct.) In its new complex of facilities, SSE has two below-grade storage facilities so that it can maintain duplicate sets of its vast seed collection as well as a frozen-seed vault. Seeds are grown out on a rotational basis, depending on their "shelf-life", so that the seed stock remains viable and continues to evolve with the changing environment.

The staff of SSE are a highly gifted lot, conscious of the political and cultural aspects of their work and of the historic importance of plant selection, breeding and conservation by subsistence farmers. They also appreciate indigenous knowledge and folk wisdom about the storage of seeds as well as about growing them and the use of their plants.

There are clearly two streams of genetic conservation in North America: those who regard biodiversity conservation as a "scientific" and biological necessity without political or cultural ramifications and want to keep this activity quite separate from any other social movement, and those who understand the conservation of biodiversity and the way in which it is done as deeply political acts. The first group wishes to keep clear of any affiliations that might tarnish their chances of government or charitable funding, while the second group seeks alliances with all those working not only for conservation of genetic diversity but also for justice for those who are the primary propagators and conservers of genetic and cultural diversity.

Seed Savers Exchange, for example, is a not-for-profit charitable organization which shares (genetic) information as widely as possible as the best means to conserving it, recognizing that information and knowledge are not diminished or used up by being shared. On the other hand, there are other heritage seed companies that regard information as a means to wealth, achieved by selling (genetic) information (the seed) at a price and for a profit. The difference is similar to the difference between a farmers' market and a CSA (community shared agriculture). The first is a commodity relationship, regardless of how much better it may be than the supermarket model, while the CSA is a social relationship. In both cases the work of the farmer gets paid for,

but the mechanisms of compensation are radically different, though apparently similar.

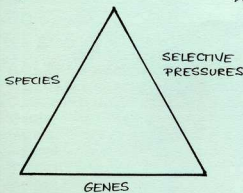
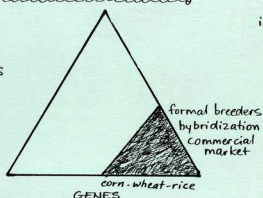
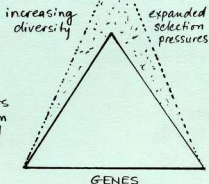
Native Seeds/SEARCH in Arizona, founded by Gary Nabhan (author of the beautiful book *Enduring Seeds*) is a companion association to SSE, as is the American Livestock Breeds Conservancy and the Heritage Seed Program of the Henry Doubleday Research Association in Britain. In contrast, Seeds of Change, in New Mexico, is a for-profit seed company dealing in both open-pollinated and hybrid heritage seed. There are many other examples around the world of both types.

In Canada, the Heritage Seed Program of Canadian Organic Growers is similar to Seed Savers Exchange, but with less of a political/cultural dimension, while Joywind Farm Rare Breeds Conservancy appears to eschew any political or cultural dimensions and operates alone as a non-profit society. Of course all these organizations are serving a valuable purpose, but at a time when there are mounting pressures to privatise everything, including genetic information, and when "the bottom line" takes precedence over justice, morality and conservation of genetic and cultural diversity, we can hope everyone will come to recognize the importance of political action against monoculture and the patenting of any and all life forms.

AgMissions took the unusual step of issuing a press release at the conclusion of its meeting, prompted by a report in the New York Times that the heads of most of the major religious organizations in the U.S. were calling for a ban on the patenting of animal and human life forms. While welcoming this move, AgMissions was highly critical of the call because it did not mention plants. The press release read, in part:

The role of farmers as primary plant breeders and the right of farmers to save and propagate their own seed is strongly endorsed by Agricultural Missions. Just as important is respect for and preservation of the traditional knowledge held by farmers and indigenous peoples concerning the uses, conservation and expansion of the biodiversity with which they live and upon which we all depend.

Agricultural Missions agreed that while the work of protecting biodiversity and traditional knowledge will be a continuing long-term activity, reversing the current trend that permits life forms to be patented requires immediate action. Therefore Agricultural Missions welcomes the position taken by the leaders of a wide variety of churches and religious groups condemning the patenting of animal and human genetic material. Recognizing the sanctity of all Creation, however, Agricultural Missions calls for the elimination of patenting on any and all life forms.

Camila's trianglesModern "scientific plant breeding"Tradition of "folk" breeding

The statement aligned Agricultural Missions with other groups around the world in calling for recognition by national governments, the World Bank and the officers of the Consultative Group on International Agricultural Research (CGIAR) that *the agricultural research agenda ought to be determined by the needs of farmers as decided by farmers themselves.*

One of the participants in the study session, Camila Montecinos from Chile, made a graphic presentation on the pressures against biodiversity. She also talked about different spaces for different people, pointing out that traditionally women's space is near the house, and that is where the kitchen garden will be. She told of an old variety of lima bean that would grow right against the house, but would not grow with corn or in any other location.

The length of the bottom of the triangle in Camila's graphic, the genes of all crops, cannot be lengthened — there is no such thing as creating a new gene — but it, like the left side (species), can be shortened, resulting in the loss of biodiversity, as has occurred as a consequence of the green revolution and industrial agriculture. The left (species) side can be lengthened through natural processes and through intentional seed conservation and farmers' work as breeders with open-pollinated crops. The third side, selection pressures (procedures), can be increased or narrowed as well.

Modern industrial agriculture has applied very limited selection pressures — the ability to respond to fertilizer and irrigation — to a very limited number of crops: corn, rice and wheat.

One can start with a very different perspective however, recognizing that there is no optimum strategy: all kinds of breeding strategies can be used on all kinds of crops under all kinds of production systems and for all kinds of uses. Even all kinds of food preparation would have to be considered, such as whether fuel is available for cooking, or what kind of grinding equip-

ment is available. The result would be a process of continuous creation with changing strategies, rather than continuing destruction with a single strategy, and every farmer would have the right to be a plant breeder, rather than just a few transnational corporations.

Why the public has lost respect for 'science'

"What scientists are learning and beginning to publish is that many natural ingredients found in plants and other foods can have long-term benefits to our health. *At the very least, these 'remedy foods' provide low-risk options and sometimes even enjoyment.*"

(from an article entitled "Neutraceuticals" in the *May issue of Food In Canada*)

... and Industrial Food

"The best insurance against a recession are products that meet consumer needs. The [poultry] industry needs to look at ways of using chicken as a component or ingredient. In order to keep consumption trends going up, we must sell to everybody." (Tyson Foods executive Donald Wray, reported in *Meat & Poultry*, April 1995)

"Each time a baby is born, it translates into a two-year window of potential shopping opportunities. Having the right product selection and the right layout in the baby department will help new parents think of your store as the 'baby's store.'" (lead for article on "Selling for Babies" in *Canadian Grocer*, May 1995)



FRUIT FLIES

It seems we were a bit too subtle in the last issue with our depiction of what I like to refer to as "fruit flies" — those increasingly ubiquitous and annoying stickers on fresh fruits and vegetables. While turning over the compost pile, I realized that they are not biodegradable. They are also another expense that the industry would like to pass along to the purchaser.

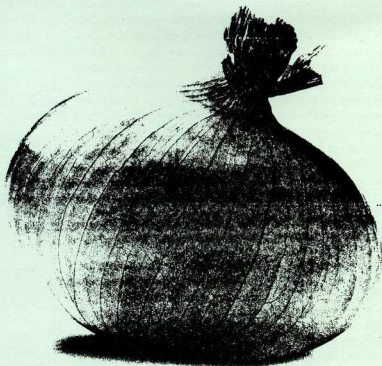
They are fun to collect, however. Next time you go shopping, see how many you can collect. A piece of wax paper is useful for this purpose. Some of them are hard to peel off, but that just adds to the 'excitement' of 'shopping'. We'll award a one-year's subscription to *The Ram's Horn* to the person who collects the most by July 1st. You can send us a photocopy of your collection and save the original for interior (or exterior) decorating. (I met the young daughter of a colleague on the street the other day and she had a 'fruit fly' on her forehead!) - BK

32 years ago I met Brewster and was very impressed by the way in which he not only refused the promotional "green stamps" from the local supermarket but, when the cashier insisted on giving them to him, politely pasted them on her forehead. Some people never change.

- CK



From now on, onions too, will be divided into the have's and the have not's



A full-page ad in *The Packer* for DelMonte Fresh

WANTED: INDIGENOUS PEOPLE'S GENES

by Marcus Colchester (Co-ordinator of the World Rainforest Movement)

The wave of international concern for vanishing biological diversity has identified a new field for prospecting: vanishing peoples. The US-based **Human Genome Diversity Project** is intent on collecting tissue samples from 700 endangered indigenous societies, whom it refers to as 'isolates of historic interest'. It aims to 'immortalize' them, by establishing viable cell lines in laboratories, in order to search for unique DNA sequences that may offer clues to genetically-caused diseases and to potentially lucrative cures.

A recent British television documentary, *'The Gene Hunters'*, by independent TV producer Luke Holland, confronts us with the moral dilemmas of this 'genetic goldrush'.

The proponents of the Human Genome Project argue that the collection and eventual patenting of rare human cell-types and genes from these peoples is justified for the 'greater human good' — the applied science provides a short cut to new cures. The peoples themselves, however, have rather different opinions, as this film brings out. Explains Leonora Zalabata, spokeswoman for the Arhuaco people of northern Colombia: *'Our land, our culture, our sub-soil, our ideology and our traditions have all been exploited. This could be another form of exploitation, only this time they are using us as raw materials.'*

George Annas, Professor of Medical Ethics of the Massachusetts Institute of Technology, agrees: *'We're taking from them their DNA, which we now consider like gold. It's even worse than standard colonialism and exploitation because we are taking the one thing that we value. And after we take that we have no real interest in whether they live or die.'*

Nor has Ray Apodaca of the National Congress of American Indians much sympathy for the 'pure science' justification of this research — that it will reveal the history of human migrations. *'We know where we came from, and we know who we are, and we think we know where we are going. Why do we need to know anything else? I mean, is this for their benefit? It certainly isn't for ours.'*

He reminds us of earlier 'scientific' investigations into the unique characteristics of native Americans, which led to hundreds of Indian graves being robbed in the last century to measure skull sizes and estimate racial intelligence. Taking people's blood and other tissues in the name of science and global benefits today is not very different and has led to bitter reexaminations.

'They haven't been honest. They haven't told the indigenous authorities what they are looking for. We think the way they have taken away these samples is arbitrary. We don't want to be guinea pigs for their experiments,' explains Leonora Zalabata.

The complaint highlights the key issue in this moral debate, 'informed consent'. Do the individuals who are giving these samples know what happens to them? Are they consulted about further applications of the scientific findings? Are they assured of a share of any benefits? High in the Sierra Nevada in Colombia we learn the truth, as geneticists from the Bogota-based Genetics Institute, accompanied by scientists from the pharmaceuticals giant Hoffman-La Roche, draw blood from isolated Asario Indians.

'In fact, we don't tell every community that we are immortalising their cells,' Dr Alberto Gomez admits to camera. On the contrary, we learn, the Indians are persuaded to allow their blood to be taken because the visiting doctors offer them on-the-spot medical treatments, which these isolated peoples otherwise have little chance of obtaining. Nor, we learn later, do the communities get informed about any scientific findings, and patents are being taken out without the knowledge and consent of the local people. Scientists, however, are concerned that there may never be another chance to take their samples: the peoples may die out, taking their genetic secrets with them.

source: *Third World Network Features*, 25 April, 1995



Growth in 1994 World Agrochemical Market

The 1994 world agrochemical market experienced the largest increase since 1984, according to a report from Allan Woodburn Associates. The value of the end-user market worldwide, taking into account the effects of inflation and currency fluctuations, rose approximately 5.1% (US\$25.9 billion) in real terms.

The leading agrochemical company in 1994 was Ciba-Geigy, with sales of nearly US\$2.8 billion, followed by Zeneca, DuPont and AgrEvo, all with sales of more than US\$2 billion. They were followed by Monsanto, Bayer, Cyanamid, DowElanco, Rhone-Poulenc and BASF.

The findings of the Woodburn report supported the conclusions of another recently released report from the Freedonia Group, which predicted an annual growth rate of 4.4% in world demand for pesticide active ingredients between 1993 and 1998. Freedonia forecasts that this growth will be driven by developing markets such as China and Brazil, as well as a movement towards higher priced products. The Freedonia report forecasts over 70% of demand will be for herbicides and insecticides, with biopesticides continuing to gain a share of the market as safer alternatives to existing products.

Although Freedonia forecasts the value of the world pesticide market to increase by 4.4% a year until 1998, volume consumption is expected to grow by less than 1% a year, reaching 2.6 million tonnes in 1998. Growth will be constrained by low or declining demand in industrialized countries and the substitution of new, stronger compounds. Freedonia predicts that China will be the most rapidly growing market.

Source: *Agrow*, February 3 and March 3, 1995, from PANNUPS (Pesticide Action Network North America Updates Service)



MORE FRUIT FLIES (from *The Packer*): "Tree fruit shippers increasingly are offering Price Look-Up numbers to satisfy retail demand. Richland Sales Co, a Reedley, Calif. packer [and Cargill subsidiary] has spent heavily on equipment for applying PLUs this season. The numbers help differentiate tree-ripe fruit and varieties."

THE RAM'S HORN is published 11 times a year by Brewster and Cathleen Kneen

Subscriptions: in Canada, \$15 (individual), \$25 (institutional)
Outside Canada: US\$20 or Can\$26 (individual), US\$30 (institutional)
All cheques payable to The Ram's Horn

Readers' financial contributions are an important support for this publication.

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