

BC *Organic Grower*

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*British
Columbia
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Organic*



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COABC, 3402 32nd Ave Vernon BC V1T 2N1

President's Report

by Patrick Mallett

When most of COABC's members are up to your elbows in dirt, consumed by the Spring plant, I am off again to discuss the merits of voluntary certification in another global forum. This time it's the United Nations Conference on Trade and Development (UNCTAD). They have a new Task Force on Environmental Requirements and Market Access – which is a fancy way of saying that voluntary standards and certification can often be more of a burden than a benefit to small producers, particularly in developing countries. In fact, the prevailing perspective of developing country governments is that voluntary initiatives such as organic agriculture standards are creating barriers to trade for their producers. This is certainly not what was intended when organic standards and certification first came into existence.

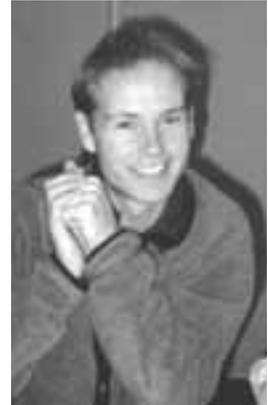
So what went wrong? Certification started out as a tool for producers to assure their customers that the food they were buying met certain production standards. This is necessary where the farmer and the consumer don't have a face-to-face relationship. However, as all COABC licensees are only too aware, there is a recurring cost associated with certification. Since this cost is not very elastic, it creates proportionally more of a burden for smaller operators.

Before you start in on a rant about the high costs of certification in BC, it is useful to take a look at the situation from a global perspective. Imagine that you are a farmer in Nicaragua, farming an acre or less of inter-cropped coffee. You are organized into a cooperative so that you can sell your green coffee into the international market. Luckily, you farm organically, since the bottom fell out of the conventional coffee market about two years ago and it now costs many farmers more money to produce their conventional coffee than they receive for the green product. However, even though you farm organically, your cooperative still needs to get certified to ensure your coffee is recognized as organic. This is where the problems start.

As the organic market continues to expand rapidly, national governments are taking

increasing interest in regulating it. This is a natural tendency. Governments want to ensure that all products being sold as organic truly reflect their understanding of what organic means. Farmers in British Columbia want this as well in the hopes that it may stem the deluge of foreign imports. Governments don't often buy into the voluntary standards such as the IFOAM Basic Standard because they have not traditionally relied on outside experts to tell them how to regulate. (In B.C. we are almost unique in having the farmers determine the content of a regulation – let's hang on to that!) So, starting with the European Union in 1992, there has been a trend for governments to develop organic regulations. In addition to the European Union, the United States and Japan are the major markets for organic imports. They each have their own regulation. The regulations aren't harmonized. And neither are the certification procedures required to show compliance with those regulations.

Now, remember that you're a coffee farmer in Nicaragua. Your cooperative is shipping the coffee around, mainly to the Europeans, searching for a stable market. In order to enter any foreign market that has a national regulation, your cooperative has to be certified to their standard, using their certification procedures. Your local certification body is not recognized by government regulatory agencies so you have to rely on international certification bodies from Europe and the US that charge high daily rates plus travel expenses. And it's not just one certification; there are coffee cooperatives that are assessed four or more times each year, each time with different documentation, against a different standard, for a different market. It's a good thing your cooperative is being certified as a group, otherwise you wouldn't stand a chance. And you would be left selling that



organic coffee into the conventional commodity market at a loss.

Switch back to British Columbia. COABC and two of our accredited certification bodies expended a lot of time and effort to get our accreditation program for ISO 65 recognized by the US National Organic Program so that our farmers who are exporting to the States can continue to do so. But they still have to meet the US standard, as well as the COABC standard. Harmonization of standards wasn't on the table. Canada is developing a National Organic Regulation. One of the main impetuses of the development of this regulation is to ensure that organic products coming into Canada meet our standards. Great! Only, it will also likely be the case that our regulation will be structured to meet the requirements for mutual recognition by the Americans, the Europeans and the Japanese. In this way, we are like the more than fifty countries worldwide whose governments are at some stage in the development of national organic regulations all trying to be compatible with major export markets but, unwittingly, adding to the bureaucratic nightmare of an over-regulated industry. No wonder developing country governments are crying foul.

It's an ugly situation when the business of certification gets in the way of the practice of farming. Certification is necessary, especially for non-local trade. I truly believe that. But somewhere along the route, we came off the tracks. IFOAM is working with UNCTAD and the Food and Agriculture Organization (FAO) of the UN on another Task Force on the harmonization of organic standards and regulations. IFOAM already has a Basic Standard that is recognized globally and that could easily be adopted by governments as the baseline reference on which all national standards are built. But that doesn't seem likely, as each country thinks they can somehow do it better. ✓
Too bad for the farmers!

COABC has moved to a new Office

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fax, email and phone: still the same
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see page 22 for more office news!

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A hollow victory for the biotech giant

by Cathleen Kneen

By a narrow majority (5-4) the Supreme Court of Canada has decided in favour of Monsanto in its patent infringement suit against Saskatchewan farmer, Percy Schmeiser. However, the Court decided against Monsanto's claim for costs and damages. Both parties must pay their own court costs, as the Court ruled that Schmeiser did not profit from the presence of RoundUp Ready canola in his fields.

The ruling is a victory for the biotech companies, in that it allows them monopoly control over seeds, plants and their progeny on the basis that they consist of cells that contain patented genes either intentionally or as a result of GMO contamination.

On the other hand, the ruling actually strengthens the Saskatchewan organic farmers' class action lawsuit against Monsanto. Monsanto can now claim ownership of the seeds and whole canola plants in which their patented gene is inserted (instead of only ownership of the Roundup Ready genes). But with ownership comes responsibility, and they now need to be held liable for all consequences arising from their patented genes, seeds, and plants. The suit seeks compensation for damages caused by contamination of certified organic crops by Monsanto's Roundup Ready Canola and Bayer's Liberty Link Canola, clean-up costs, and an injunction to prevent commercialization of Roundup Ready Wheat if Monsanto moves to reintroduce it. This legal action (Hoffman et al v. Monsanto et al) began in January 2002. The class certification hearing will be held September 14 and 15, 2004 at the Court of Queen's Bench, Saskatoon.

Marc Loiselle, on behalf of the Saskatchewan Organic Directorate, notes that the Supreme Court's decision came eleven days after Monsanto's shelving of their Roundup Ready wheat program. "That

withdrawal allows us to now focus our class action lawsuit more on Monsanto's contaminating patented canola without having to seek for an injunction to stop their GM wheat from being grown in farmers' fields and commercialized," says Loiselle. He adds, "We celebrate the fact that we have succeeded along with many others in forcing Monsanto to back down. But we may now need to initiate a new injunction against Syngenta to stop their proposed introduction of GM fusarium resistant wheat by 2007-2008, and so our mandate continues. For now though we will concentrate on seeking to hold Monsanto and Bayer legally liable for the damage caused to organic farmers by the introduction of GM canola ... and that has evidently happened and continues to occur frequently ...such as on our own farm in August 2003 when strong winds blew neighbouring RR canola plants onto one of our fields."

The majority opinion makes the analogy of GMO cells and lego blocks (para 42). Loiselle comments: "This analogy is faulty because a structure made of patented blocks can only exist if the blocks are used to make it. In the GMO cell case, it is true that the modified cells make up the whole plant, but the modification is not required for the cells to survive. In fact, the pre-existing plant cells are required for the GMO modification to survive/exist. We can then

conclude that the judges either don't understand biology, or were searching for a way to interpret the law in the interests of the biotech industry." Supporting this notion is the fact that the Prime Minister alone has been appointing judges to the Supreme Court, so one may suppose that the latest two, Deschamps and Fish, would reflect Jean Chrétien's unabashedly pro-biotech perspective. And it's probably not just Chrétien. In his book *Paul Martin, CEO for Canada*, Murray Dobbin observes that



the 8-year contract between the Federal Government and Monsanto on development and commercialization of Roundup Ready Wheat was prompted by the then Finance minister Paul Martin who gave new directives to Agriculture & Agri-Food Canada that the Canadian Food Inspection Agency had to focus more on contracting in order to be more self-funding.

Loiselle continues: "This Supreme Court decision is contrary to the same court's decision in a similar case involving patenting and higher life forms, when it decided to not allow the Harvard Oncomouse to be patented in Canada. Clearly, the patent law in Canada needs to be rewritten by our legislators to remove ambiguity and make clear that all higher life forms are not patentable. Of course if I and our organization, the Saskatchewan Organic Directorate, and many others had our way there would be no patenting of any life!"

The Supreme Court's decision states "Where Parliament has not seen fit to distinguish between inventions concerning plants and other inventions, neither should the courts." (para 94); and furthermore the minority opinion recommends that Parliament needs to consider the protection of innocent bystanders, as the current law is inadequate on this matter.

In an editorial on May 5, the Toronto Star commented: "The Monsanto case raises difficult questions about how modified genetic material can be controlled once it is created. The court rightly tossed this hot potato back to Canada's lawmakers. Rapidly developing agricultural technology, it said, may give rise to 'moral concerns about whether it is right to manipulate

genes in order to obtain better weed control or higher yields. It is open to Parliament to consider these concerns and amend the Patent Act should it find them persuasive'. ... It is time Canadians had a full and open debate on the merits and pitfalls of bioengineering."

At stake, after all, is nothing less than farmers' time-honoured practice of saving and developing seeds that fit their particular conditions and management. It is this research, based in local knowledge and personal involvement and commitment, on which agriculture is based. It is not merely a question of the farmer's "right" to save and re-plant seed, it is the future of agriculture which is at stake.

This would be the ideal time for Parliament to enact moratoria on any further release of GE crops and patenting of any life forms. Barring any proactive measures by Parliament, legal recourse, such as the organic farmer class action, may appear to be the only way to protect Canadians from unfettered genetic experimentation that is promoted as progress.





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Analysis of the judgement

Brewster Kneen

A careful reading of the entire judgement of the Supreme Court of Canada in the case of Monsanto Canada v. Percy Schmeiser is not demanding, but it is disturbing. To my non-legal mind, it appears that the majority opinion expresses a rather total ignorance of biology. The argument is cast entirely in 19th or 20th century mechanical terms, such as reference to zippers and lego blocks. The majority opinion virtually attributes the growth and reproduction of Schmeiser's canola to the presence of a patented genetic construct.

Oddly, the Court did not award damages to Monsanto, on the grounds that Schmeiser gained absolutely nothing by the "use" of Monsanto's patents, yet it claimed infringement of the patent. Both the majority and the dissenting opinions explicitly deny the possibility of patenting plants on the grounds that they are "higher life forms," the patenting of which was decisively ruled out by the judgement of the court in the Harvard oncomouse case in 2002. In the Schmeiser case, however, the majority opinion held that because Monsanto has legitimate patents on both the transformation process and the genetic construct that is replicated throughout the plant, "use" of the plant violates Monsanto's patents. In effect, according to my common sense, this amounts to de facto recognition of a patent on the whole plant.

As the Court put it, "By cultivating a plant containing the patented gene and composed of the patented cells without license, the appellants [Schmeiser] deprived the respondents [Monsanto] of the full enjoyment of the monopoly."

This argument is more detailed in paragraph #42:

"In [this] case, the patented genes and cells are not merely a 'part' of the plant; rather, the patented genes are present throughout the genetically modified plant and the patented cells compose its entire physical structure. In that sense, the cells are somewhat analogous to lego blocks. . . The Lego structure could not exist independently of the patented blocks. . . "

The bias that permits such an argument is spelled out in paragraph #90: "The appellants' argument also ignores the role human beings play in agricultural propagation. Farming is a commercial enterprise in which farmers sow and cultivate the plants which prove most efficient and profitable. Plant science has been with us since long before Mendel. Human beings since time immemorial have striven to produce more efficient plants. Huge investments of energy and money have been poured into the quest for better seeds and better plants. One way in which that investment is protected is through the Patent Act giving investors a monopoly when they create a novel and useful invention in the realm of plant science, such as genetically modified plants and cells."

The fact is that Plant Breeders Rights did not become a reality in Canada until 1990, long after canola was developed, let alone most of our food crops. (The first legal form of "plant breeders' rights" did not come into existence until 1961 with the formation of the International Union for the Protection of New Plant Varieties UPOV millennia after farmers started selecting seeds and altering plants.)

The Court's opinion amounts to a huge insult to the many millions of farmers who have selected their seeds, nurtured their crops and selected their seeds every season in an unending cycle, not for maximum "efficiency" but for a wide variety of characteristics, conditions and uses without a hint of ownership claims, patents or monopoly.




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Cherry Fruit Fly Research

by Sue Senger



The weather has been kind to cherry growers so far this year. An early spring has meant that cherries are ripening ahead of schedule, and the cool weather at the end of May has stalled the emergence of the cherry fruit flies. Still, they are back, as always, to spoil what is otherwise an easy orchard crop to manage.

The Western cherry fruit fly is a small fly with black striped wings that emerges from the ground in late May or early June and lays its eggs under the skin of ripening cherries. The small egg in each fruit develops into a white worm that burrows into the center of the fruit and then eats around the cherry pith, ruining the fruit. When the worm is sufficiently large, it chews holes in the cherry to escape and drops to the ground where it buries itself, forms a protective case (puparium) and waits until the following spring to begin the cycle again. Because there is zero-tolerance in the market

place for wormy cherries, there is little room for "management" of these pests. Complete control is the only option currently acceptable, and that usually means using chemical sprays.

For organic producers there are no magic bullet organic solutions to this pest problem today, though intensive management of the cherry trees can dramatically reduce the incidence of the pest. This includes picking the trees clean following market production so that no breeding materials remain. The problem then becomes how big an area would you have to maintain this way in order to greatly reduce the fly population without chemicals? How far do the cherry flies travel from source populations?

A research study underway in Lilloet on the dispersal of the cherry fruit fly should provide some answers to these questions. As the cherries ripen, cherry fruit flies that have been marked with paint will be released at various research sites in order to determine how far the flies are moving in the field and what factors are attracting them to some trees more than others. The structure of the tree and the amount of fruit on it are the key factors being considered this summer's research.

Unlike in traditional mark-recapture studies where insects are marked, released in huge numbers and then caught on traps, marked cherry flies in this study will be detected by a team of trained observers who begin systematic

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surveys of the treatment trees within an hour of the flies' release. In this way it is possible to determine what is happening in each of the modified trees over a period of days. If red flies are showing up in the tree where blue flies were released, then the distance these flies have moved can be determined and the differences between these two trees are known. By comparing the data for all the trees at each survey, a snapshot of the flies' movements can be gained. It's labour-intensive work, but it will provide a comprehensive look at cherry fly movements between trees.

Because backyard cherry trees are often less managed than orchards, they can contribute to the

overall cherry fly problem in an area. The Lillooet study will include both backyard and orchard settings in attempt to better understand the differences (or similarities) in how flies respond to these trees.

This work is being broadly supported by the National Science & Engineering Research Council, Agriculture & Agri-Food Canada through the support of Dr. Howard Thistlewood at the Summerland Research Station, the Shuswap-Thompson Organic Producers Association who provide funding and orchards to work in, the Okanagan-Kootenay Cherry Growers Association through their support for a summer assistant, Human Resources and Development Canada for further summer assistant support, and by the community of Lillooet. ✓



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Avian Flu

COABC Calls for Environmental Assessment to Prevent Future Disasters in Poultry Industry

by COABC Board of Directors

The Certified Organic Associations of British Columbia (COABC), the organization representing organic producers and certification agencies in BC, is dismayed at the damage that Avian Influenza has caused the province's poultry sector. Millions of chickens have been slaughtered to prevent further spread of the disease. Organic producers residing in the Fraser Valley have also had their flocks destroyed, though none of their birds have yet tested positive for the influenza.

"We extend our sympathy to all of the farmers that have been affected by the disease this truly is a tragedy for BC agriculture," says Kirsten Kane, COABC Business Manager. She continues, "One of the great risks of the mass slaughtering of poultry is that birds with immunity are being slaughtered too, and we are reducing the genetic diversity that will remain in the Fraser Valley. Genetic diversity could protect the poultry industry from future disasters. We call on the government to assist the industry to rebuild in an environmentally sustainable manner to avoid repeating such disasters in the future – an environmental assessment is in order."



Over 80% of BC's poultry industry, which includes laying operations, hatcheries and broiler production, is located in the Fraser Valley. Although wild birds have been accused of spreading the disease, there is no scientific basis for this assumption, or for the suggestion that free-range flocks with access to the outdoors pose any risk to the poultry industry. On the contrary, it is more likely that the high concentration of poultry farms, combined with intensive farming practices, have contributed to the rapid spread of the disease. As well, the small land base of the valley is inadequate to absorb the manure from the birds, turning a valuable resource for growing into a pollutant. The poultry industry, the residents of the Fraser Valley, and BC agriculture could benefit from a de-centralisation of poultry production in the Fraser Valley.

The COABC would welcome the opportunity to participate in a process to design new production criteria for commercial poultry operations to ensure that similar events do not affect BC agriculture in the future.



Biosecurity: A Short-Sighted Approach

by Cathleen Kneen

The watchword in this new era of "terrorism" is "security", and in the food system, "biosecurity". This is supposedly achieved through measures which seal off production or processing facilities from any potential contamination from the outside world. So animals are kept in closed containers and fed antibiotics, rather than allowed to roam and develop strong immune systems which would allow them to co-exist with disease organisms without becoming sick.

The recent outbreak of Avian Flu in the Fraser Valley is an excellent case in point. The chicken farms that first reported infection had some of the most sophisticated and stringent biosafety protocols in the country. Nevertheless, not only were they infected, but the infection spread

throughout the region. The latest estimate from the CFIA is that 16 million birds (including chickens, ducks, geese, turkeys, peafowl, and even an emu!), from 42 'commercial' and 11 'backyard' flocks have been killed to stop the spread of the disease. In other words, pretty well everything with feathers in the Fraser Valley has been wiped out. The reaction of the authorities to this disease reminds me of the scene in Arlo Guthrie's 1960s classic "Alice's Restaurant" where young Arlo charms the Draft Board psychiatrist by jumping up and down and yelling: "Kill! kill! kill! kill!".

The government's theory is that once the purge is completed, the barns can be thoroughly dis-

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infected and re-stocked and life will go on as before. This of course begs a number of questions about the rise and spread of the disease: questions such as, does a healthy immune system protect a bird from the Avian Flu? or, to come at it from the other side, is there anything in the high-tech practices of our ultra-modern poultry facilities that might pre-dispose them to such an epidemic? According to the vets, the answer is no: this is what they call a 'high-path' virus which is so infective that it will spread no matter how healthy the birds might be to start with. However, there is no evidence that any Certified Organic birds were infected (although they were 'depopulated' along with the rest).

Nor has there been evidence that the Avian Flu was caused by wild birds, as claimed by the CFIA. Indeed, there is a strong suspicion that the disease was spread by people moving from one farm to another. As for its origins, the redoubtable Fred Reid speculates the infection came from within the poultry industry itself. "Broiler Breeder farms," he points out, "get their stock from US sources and avian influenza is currently hot in some regions of the US. The disease moves rapidly through a flock once in one of these environmentally controlled barns where the birds are confined at high density and where constant antibiotic use results in a deficient immune system. The high concentration of these intensive factory farms in the Fraser Valley compounds the problem even more."

The most recent statistics indicate that about 13% of Canada's poultry are in the Fraser Valley. Now, B.C.'s total population is about 13% of the national total. But the population of the Fraser Valley is only 59% of the population of BC and yet 84% of the province's birds are produced there. It doesn't take a mathematical whiz to detect an imbalance there! and it doesn't take an environmentalist to note that such a concentration of birds in a small land base will cause serious pollution problems.

Rather than turn to the organic model as a way of avoiding such crisis in the future, the factory farm industry is using the avian flu outbreak as a means of attacking organic farms and the small back yard farmer that raises a few chickens.

Fred continues, "The organic community has offered an alternative to factory farming over the last 10 years and has been calling for the diversification of agriculture for even longer. The organic model is one of smaller farms with poultry raised in a humane way, with the manures from the birds being collected and composted for use on the farm and neighboring organic farms. . . . Rather than turn to the organic model as a way of avoiding such crisis in the future, the factory farm industry is using the avian flu outbreak as a means of attacking organic farms and the small back yard farmer that raises a few chickens. . . .The destruction of back yard birds will wipe out most of the reserves of poultry genetic diversity in the province. . . All that would be left standing is the mega barns, [and] the government bailout of the industry would allow them to rebuild rapidly in the existing factory farm model that created and exacerbated the problem in the first place."

The destruction of birds which have been carefully selected, whether for heritage variety conservation, productivity under local conditions, or other characteristics such as gentleness, is heart-breaking. Fred speaks for most of the Fraser Valley growers when he describes the process as "a nightmare". Karl Hann, another local organic grower, simply says that the CFIA's science is wrong. Rather than killing non-infected birds, samples should be taken to determine why it is that organic birds appear to be more resistant to this disease.

Perhaps those authorities who are so eager to re-instate and reinforce the industrial model of agriculture should spend a little time in Japan, where the Agriculture Ministry and the poultry industry stage an annual ceremony to honour the chickens.

"We want to express our regret to chickens for having to kill them, while also giving thanks to them for providing us with food," said Hideyuki Shimada, a director at the Japan Poultry Association. "I don't know how chickens feel about it, but humans should show appreciation."



Environmental Farm Planning & Water

By Elaine Spearing

Maintaining and improving soil fertility, as the fundamental principle of organic farming, rightly receives much thought and attention from organic farmers, along with continuing discussion and debate. In contrast, most of us are less aware of how our farming activities may affect our water supplies, though we know that water is one of the most valuable resources for all farmers. The Environmental Farm Planning (EFP) process is an opportunity to identify and improve our level of environmental stewardship, including stewardship of water.

How you can make use of EFP:

The first step is to attend an EFP workshop for an introduction to the entire scheme and the publications (planning workbook and reference materials). Areas covered under the 'water' heading include: water supply (quantity and

quality), irrigation, drainage, managing leachate, stormwater and runoff, riparian management. It is your decision how much you make use of EFP after attending the initial workshop.

The second step is to use the planning workbook to give your farm an 'environmental health check' and identify improvements that could be made, if any. For example, with reference to water, the workbook gives guidance on how to check the efficiency of irrigation; an Irrigation Management publication provides a more detailed irrigation system assessment if needed. The areas bordering streams or lakes (riparian areas) are crucial to the health of watercourses, and in turn the condition of the water, water table and surrounding land. A

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separate publication, Riparian Management provides a more detailed checklist and information on managing farm activities around riparian areas. A drainage management publication covers operation and maintenance of drainage systems.

Use the reference guide to help you complete the planning workbook. It can be used as a quick reference to answer questions, eg,

What is the minimum distance a septic field should be from a well? The reference guide also gives concise information on factors that can affect water quality, beneficial management practices, legislation and sources of more detailed information. It is easy to read and will give you ideas on how you can protect water sources, not only for the farm, but also for you, your family and the environment.

The third step is to complete an 'Action Plan'. You can ask an Environmental Farm Plan Advisor to visit your farm to help you complete your plan.

Once your plan is complete you can have your Action Plan Approved by the EFP farm plan advisor. You may be able to apply for funding to share the cost of eligible best management practices (BMPs) identified in your approved action

BMP Category	Type of practice	Cost Share	Maximum payment per applicant
Farmyard Runoff Control	Upstream diversion around farmyards and livestock facilities	50%	\$15,000
	Downstream protection: catch basins, retention ponds, constructed wetlands.		
Water well management	Sealing and capping of old abandoned water wells	50%	\$2,000/well \$6,000 total
	Protecting existing water wells from surface contamination	30%	\$1,000/well \$3,000 total
Riparian Area management	Relocation of livestock watering	50%	\$5,000
	Buffer establishment	50%	\$5,000
	Riparian native rangeland restoration or establishment	50%	\$5,000
Erosion control measures	Constructed works: gully stabilization, bank stabilization	50%	\$20,000
Nutrient recovery from wastewater	Recycling of waste water streams from milk houses, fruit and vegetable washing facilities and greenhouses in order to recover nutrients	30%	\$10,000
Irrigation efficiency	Irrigation equipment modification/ improvement to increase water use efficiency	30%	\$5,000
	Consultative services to develop an irrigation plan that improves water use efficiency	30%	\$2,000

plan. Do not start your project before receiving approval of the project, since any projects already underway are not eligible for funding.

See above for some examples of incentive payments for accepted practices. (These are examples only.)

The Canada-British Columbia Environmental Farm Plan Program is a new program which applies to all types and sizes of farms throughout the province. It is a voluntary process that producers can use to identify both environmental strengths and any potential risks on their farms. Where it is appropriate, it includes a prioritized action plan to reduce the risks. The BC Agriculture Council (BCAC) will deliver the program in cooperation with BCMAFF and other agencies.

COABC will soon be providing Organic Environmental Farm Planning (through a contribution agreement with BC Agricultural Council) to organic producers. Look out for Environmental Farm Planning workshops this Fall.

For more information, contact Elaine Spearing elaines@quesnelbc.com (250 747-3237) or Rochelle Eisen rare@telus.net (250 494-7980). Or visit the BC Agricultural Council website at www.bcac.bc.ca/efp_programs.htm



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The Canada-British Columbia Water Supply Expansion Program

The new Canada-British Columbia Water Supply Expansion Program (CBCWSEP) is part of a national four-year initiative to help improve the capacity of Canada's agricultural community to address water supply concerns. It will give BC producers access to technical and financial support for planning and development of projects that will improve their ability to develop and enhance long-term, sustainable agricultural water supplies.

The program is open to individuals and/or incorporated groups of farmers and ranchers as well as agricultural and conservation groups, rural communities, and others. Projects must be approved before work begins. Funding may be provided for:

Tier 1: On-farm water infrastructure projects, such as wells, pipelines, water storage systems, up to one-third

of eligible costs to a maximum of \$5,000 per project; Tier 2: Multi-user infrastructure projects which provide water to a number of water users, such as tank-loaders and regional pipelines, up to one-third of eligible costs;

Tier 3: Strategic work projects such as groundwater studies, exploration or testing, regional water management planning and feasibility studies to increase opportunities for strategic partnerships and enhance understanding of operational and developmental limitations to water resources. Cost-sharing arrangements on a project-by-project basis.

The next deadline for applications is September 1, 2004. For more information contact the BC Agriculture Council or check www.agr.gc.ca/h2o/



Water Management

by Denise Neilsen

Recently, Statistics Canada has reported that residents of the Okanagan valley have the least available water per capita in Canada. Models of annual crop water demand for the Okanagan basin suggest that the demand for irrigation will increase in response to climate change as early as the 2020s. Already, towards the end of the 2003 season, several water purveyors restricted supply to agricultural users in order to maintain sufficient water for domestic supply and for in-stream habitat protection. This highlights the potential conflicts for water use, and underscores the need to plan for future water supply both at the regional and water purveyor level and on the farm. For farmers, efficient water management systems and practices will become a high priority.

Water demand in tree fruit production.

The key to the future will be to match water supply to demand. Water demand is determined by a combination of tree development and environmental conditions. Water is important to plant growth as a plant constituent (e.g. apple fruits are 80% water), as a solvent and transporter of nutrients, and as a chemical

reactant. Water is also important because it keeps cells turgid, which is required for cell growth and function, and because through transpiration, it modifies the tree micro-climate by increasing humidity and cooling through evaporation. Transpiration occurs when the microscopic pores on leaves called stomates are open. The leaf absorbs carbon dioxide from the atmosphere through the stomates for photosynthesis and growth, and in stressed trees, stomates can close. The amount of transpiration that occurs is dependent on the relative humidity of the atmosphere and temperature. When plants become water stressed, it is because there is not enough water to satisfy the demand for transpiration. The other major loss of water to the atmosphere is by evaporation from the soil surface. Together these losses are called evapotranspiration.

Direct measurements of plant water use are difficult and can only be carried out in specialised research facilities. From such water balance measurements, however, we can learn about the magnitude and timing of water demand.

continued on page 14...

...continued from page 13

Under given environmental conditions, the amount of water that is lost through transpiration is determined by the size of the canopy (leaf area). For tree fruits this is dependent on the age of the tree and increases up to the time when the trees fill their allotted space, and also on the time of season. For apple, maximum canopy development usually does not occur until the end of shoot development, which tends to coincide with the beginning of fruit cell enlargement (around 6 weeks after full bloom).

There are several ways of determining plant requirements for water, which usually require some indirect measurements of either the climatic drivers of evapotranspiration (ET), or plant or soil water status. Estimates of ET, usually called potential ET, can be derived from weather station data directly or through a web service. For British Columbia weather data, such estimates are available from

www.farmwest.com along with information on irrigation advice for different crops and regions. Another method of determining ET requirements is through instruments such as atmometers, which directly measure evaporation and can be calibrated for different crop types. These have the advantage of measuring in-situ demand and can be electronically linked to an irrigation controller to turn irrigation systems on and off. In a recent study, our group has successfully used atmometers to automatically control irrigation in four commercial orchards ranging from 5-40 acres in size. At present, there are no direct measurements of plant water status that are cheap and relatively easy to use, although there is a potential for certain types of gauges that measure sap flow to become available in the future.

There are many systems available to measure soil moisture status, the most sophisticated of which can be linked to irrigation controllers. Soil water has varying degrees of

availability to plants. When soils are saturated or just below saturation, water is readily available to plant roots. As the soil dries out, there is less water to satisfy plant requirements and what is there moves to plant roots more slowly. These characteristics vary with soil type.

Coarse textured soils, such as sandy loams, sandy and gravelly soils have the least available water. Very fine textured soils with a high clay content may be poorly aerated when saturated and have water which is bound too tightly by the soil to be available as they become dry.

Medium textured, loam, silt loam and clay loam soils have the most available water. Soil moisture content can be used to check whether irrigation practices are working well and is particularly important when the soil is being used as

a reservoir as in high impact overhead and under tree sprinkler systems, but is less useful in micro-irrigation systems where soil moisture distribution is very variable. In micro-irrigation systems water is applied frequently and the soil is not used as a reservoir to store water over several days.

There are several strategies that can be used to improve irrigation management. These include irrigation scheduling applying water to match demand; conservative irrigation systems microsprinklers, microjet and drip; and mulching to reduce evaporative losses from the soil surface. Two excellent reference books are the *BC Sprinkler Irrigation Manual* and the *BC Trickle Irrigation Manual* published by the BCMAFF.

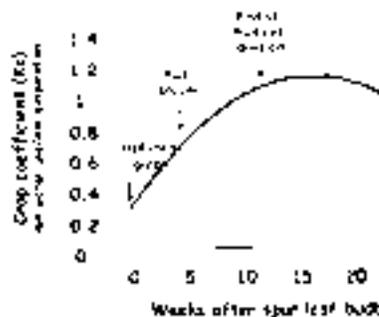


Figure 1

Year	2000		2001	
Irrigation method	Sprinkler*	Drip†	Sprinkler	Drip
Water use (mm)	978	34	899	555
Extension growth (cm)	168	165	295	236
Change TCA‡ (cm ²)	0.84	0.90	0.90	0.90
¥ no significant differences were found				
* under-tree sprinklers delivering 107 l/hr and spaced at 2.6m x 12m				
† drip emitters delivering 4 l/hr spaced at 2 per tree				
‡ Trunk cross-sectional area				

Effects of irrigation method (sprinkler and drip) on water use, tree growth and fruiting for young Braeburn/M.9 (2.6m x 1.2m spacing)[¥]

Irrigation Scheduling

Irrigation scheduling requires an estimate of water demand such as ET data from weather stations or an atmometer. Potential ET will tend to increase to a peak in mid-summer and then decline. Superimposed on this is the seasonal change in canopy size. Thus for a mm of potential ET in the spring, the plant will require less water than for a mm of potential ET in the summer. This relationship (ratio) between actual plant demand and potential plant demand for water is called the crop coefficient as it differs from crop to crop. In Figure 1, we can see how the crop coefficient increases to a mid-season peak. There is a considerable saving of water to be made if irrigation is applied using the crop coefficient. In an experiment at PARC-Summerland, using drip irrigation on apple trees, less than half the amount of water (646L/tree) was applied to trees receiving atmometer-scheduled irrigation, than to those receiving water at maximum supply rate (1304/tree) throughout the summer. With irrigation scheduling, most of the water saved is by not over-applying in the spring and fall. Scheduling can be used with all types of irrigation systems.

Conservation Irrigation

The use of conservative irrigation systems such as drip or micro-sprinkler can also save water. The effect of conservative irrigation systems on water use was measured for Braeburn/M.9 trees planted in S. Washington. There was considerably less water applied under drip than sprinkler irrigation without any detrimental effect in tree growth (see table on left).

Mulching

In the same planting, there were also some beneficial effects of applying mulches on tree growth, although it is not certain whether these effects were due to improved water relations or to other potential benefits derived from mulching, such as increased soil biological activity.

Direct measurements of the effects of mulch on tree water use have been made in a drainage lysimeter facility located in Summerland, B.C. Mulch reduced total water use, presumably through a decrease in evaporation from the soil

surface. The effect was more pronounced for smaller trees (50% reduction) probably because larger trees (20% reduction) provide some shading and reduced heating at the soil surface resulting in a lower evaporation rate.

The information presented here only scratches the surface of a very broad topic. Water supply issues for agriculture are complex and have political, social and ecological ramifications. The largest 'demand' for surface water is as habitat for fish and wildlife. However, the demand for secure agricultural water supply under current and future climates may increase and water managers and planners will have to recognise this need. In seeking to use water resources for agriculture, it is important that water is managed in a conservative way. In applying such practices, growers may be required to balance competing requirements. Our environment is semi-arid and we shouldn't necessarily be attempting to recreate a soil and plant habitat that is suited to humid regions. This may mean, for example, that drought tolerant ground covers should be planted between the rows in orchards and practices that encourage the decline of organic matter, such as tillage should be discouraged. As described, there are a number of ways to reduce the amount of water used in agriculture, which, if applied will conserve water. It is imperative, however, that any gains from current conservation efforts, be available to supply increased agricultural demand in the future.

Denise Neilsen PhD. is a research scientist at the Pacific Agri-Food Research Centre, Summerland, B.C.



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Creative Agro-Forestry

by Abra Brynne

While many farmers fantasize about reduced labour on the farm, Richard Walker has designed his farm to make it happen and works less now than he did when he started the farm.

Dragon's Eye Nursery was established on a much abused 3.6 acre horse pasture in the late 1980s when Richard moved to Grand Forks. He had been carrying out experiments with biodiversity and plant combinations on his family's large grain and seed farm in Alberta but was forced to abandon them after repeated mistaken aerial pesticide spraying that not only severely damaged the family's commercial crops but also destroyed his experiments.

Like his parents before him, he didn't believe that chemical agriculture made sense and so set about re-building the soil and biodiversity at his new farm through multiple years of cover crops and plow-downs, focusing on crops such as fava bean, buckwheat, sudan grass, rye and austrian winter pea. Meanwhile, Richard relied on the forgiving and popular cash crop of garlic to pay for his farm expenses. Once the soil health was sufficiently restored, he began establishing the agro-forest that would be the key to his reduced labour requirements.



Mountain Ash berries

Fifteen years later, Dragon's Eye Nursery farm looks more like an enchanted forest than a 'traditional farm'. It has succeeded in providing a space for year round grazing, both for humans and for wildlife. And since much of the food either grows on the trees or on plants trellised up the trees, back-ache from leaning over is almost unheard of here.

The agro-forest also holds botanical treasures sourced from around the world. Although Richard does not own a computer, much less use the internet, he has an amazing global network with others who share his passion for unusual plants and for preserving genetic diversity. This network was the source of seeds, roots or cuttings for the Chinese Chestnut, Cornelian Dogwood, Tibetan Delgo Crab Apple and Russian Mountain Ash/Hawthorn Cross which now tower in the agro-forest which covers much of the farm.

Leguminous trees, such as seabuckthorn, russian olive and wolf willow, are interplanted with the other tree varieties, fixing nitrogen in the soil. Richard selects plants for northern hardiness as well as culinary and medicinal characteristics. Among his prized trees are the mountain ash crosses, which were developed in the Ukraine by a woman crossing mountain ash with various edible fruit trees in order to produce fruit trees that can survive harsh northern climates. Richard was also among the first in BC to raise seabuckthorn and his enthusiasm continues for the amazing medicinal qualities of the plant.

The only livestock on the farm is the large population of earth worms. The other primary source of soil amendments consists of compost, using vegetative matter from around the farm. The resultant rich soil is partly responsible for the high brix levels in the vegetables and fruit on the farm. Richard has noticed a strong correlation between high brix levels and reduced

While short-season crops are easily rotated for soil management purposes, tree crops are another story. When he developed his farm plan, Richard used alfalfa, fescue and crested wheat grass to help amend the soil and prepare it for the tree plantings. As the trees grew and provided increasing shade, the alfalfa is killed off. The trees are planted with a succession plan so that the fast growing trees are the early producers and then the slow growing trees take over. To meet the nutritional needs of the trees, Richard uses a lot of deciduous leaves, both from off-farm and from his own trees. He is also a firm believer in the value of comfrey, which tolerates shade well and does not compete with the tree roots. He simply cuts it down where it grows at the base of the trees and allows it to decompose naturally.

insect pests as the conversion of the high level of sugar to alcohol is harmful to the insects when they ingest the crops.

Richard is confident that biological challenges on a farm can be met; it is the economic challenges, he says, which are the biggest.

Ultimately, he feels that this is inevitable when one applies economic values to a biological system. Like the rich biodiversity of his farm, Richard has diversified his approach to his economic livelihood. He has run a bare-root nursery from the farm for many years, sharing his unusual plants with gardeners and farmers in his home region and across the province. The medicinal qualities of many of his



Chestnuts at Dragon's Eye Nursery

plants have been distilled into tinctures which are bottled and sold throughout the Boundary/Kootenay region. As his knowledge of the medicinal properties of plants has become more widely known, Richard has also moved into working with local health practitioners, consulting on courses of healing, using natural methods.

Working models of diversified agro-forestry farms are hard to find in North America, although Richard points to systems of forest gardens and highly mixed diversified farms in the United Kingdom which show the potential. Richard's years of working in

his own agro-forest have also shifted his understanding of the farm's production it is not just food and cash crops but also the quality of the air, the beauty and shelter. The abundance of birds, beneficial insects and wildlife on his farm appear to share this perspective. ✓



			
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Water and NATFA: The politics of change by Wendy R. Holm

Back in 1987, when I and others first noticed water's inclusion in the draft Free Trade Agreement, I was still of the opinion that an informed public could change the course of public policy. To this end, I drew together 13 notable Canadians to produce the book *Water and Free Trade*, published on the eve of the '88 election (Lorimer and Sons, Toronto).

In response, Tom D'Aquino, then head of the Canadian business lobby, ran full page ads in national and local papers claiming "water is not included" and that "the people who think it is confused the words bottled and bulk".

Caught in the fast-spin cycle of a very well oiled machine, Canadians became confused. The Council of Canadians waded into the public discussion under the able stewardship of then-acting Chair Kenneth Wardroper, former Canadian Ambassador and contributor to the book *Water and Free Trade*. When Maude Barlow took over, water became the poster child for everything that was "wrong" with NAFTA, and the Council's message became a simple one: "Want to save Canada's water? Kill the Trade Agreement!"

With the policy implications of water's inclusion in the NAFTA lying mugged in the dark alleys of partisan politics, retention of sovereignty over water resources lost its place in Canadian public policy dialogue.

Then in March 2002, in my hotel room in the Hotel Nacional in Havana, the Eleventh Delegation of the Canada Cuba Farmer to Farmer Project challenged me to take up the issue again on behalf of Canada's farmers. We were discussing the strength that came from farmers speaking in "one voice". How Cuban farmers had it. How Canadian farmers didn't. And how politicians were completely inattentive without it. "But you can't get farmers to agree on anything" said one, "too many different points of view!" Not true, I suggested, it's simply a matter of avoiding the detail swamp and focusing in on the heart of the matter. Water is a good example, I continued. Like Canadians at large, farmers' feelings about NAFTA are all

over the map, but on this they agree: Canada must retain sovereign control over our water resources. The Farmers' Resolution to Exempt Water from the NAFTA was born.

Fixing the problem simply means fixing the deal. There is no need to 'kill' anything. Because Canadians were repeatedly assured water was not part of the trade agreements, what we have here is an error and a fix. And

Some Plain Facts about Water

In fact neither the words "bottled" nor "bulk" appear in either agreement (FTA or NAFTA). Water is included by virtue of the Agreement's definition of "goods" as those defined in GATT's Harmonized Commodity Coding System, which includes Tariff Item 22.01: water: all natural water other than sea water, whether or nor clarified or purified.

Like the FTA before it, all provisions of the Goods, Services and Investment sections of the NAFTA apply to Canada's water, including Chapter 11 (rights of compensation) and Chapter 7, Agriculture.

In both the FTA and the NAFTA, water is explicitly defined as an agricultural good subject to all provisions of the agreements. In the FTA, this is done by listing the tariff numbers of agricultural goods; HCCS Tariff Item Number 22.01 appears halfway down the list. NAFTA is a bit less transparent rather than repeating this brief wording, Article 711 of the FTA is instead "incorporated into and made a part of" the NAFTA by virtue of Annex 702.1 (not even as an Article but as an obscure Annex!) without further reference or elaboration fully impossible for the lay reader to follow.

The environment provisions of the FTA and the NAFTA do not apply to any good defined as an agricultural good, such items fall under the exclusive jurisdiction of the Sanitary and Phytosanitary provisions of the deal (plant and animal health).

like repairs to a fence, farmers know the quicker you fix it, the smaller the problem.

The issue is not limited to exports. Water use in Canada by American firms or firms with American investors is subject to the NAFTA. What this means is when push comes to shove in the oil patch, by industry, for power, for irrigation Americans, because they have access to NAFTA and all that it guarantees, have superior rights to Canada's water than do Canadians. Proportional use, no price discrimination, no disruption of "normal channels of supply" and, of course, the protection of Chapter 11 (compensation for profits lost).

Whether you love or hate the NAFTA is not the point. Whether you think water exports are worth exploring or should be banned is not the point. The point is sovereignty.

There is a global struggle emerging between commodity and community. Commodity is winning. It is time to draw a line in the sand and say, "here is where the rights of commodities end and the rights of communities begin. Water is that dividing line.

Already signed by hundreds of farm organizations across Canada, the Farmers Resolution to Exempt Water From the NAFTA is quickly on its way to becoming the "table with 1,000 legs" upon which Canadians can stand with confidence and say, "We support Canada's farmers in this." Then, it becomes a simple matter of democracy.

Visit the website www.theholmteam.ca and see how far we have come already. Look at the farm organizations that have endorsed the Resolution, and the non-farm groups that have voiced support. See the international support that is building. Add your organization's voice to this dialogue.

Read the one-pager *Why Water's In*. Scan *A Dozen Myths (And Why They Won't Hold Water)*. Then ask your favourite candidate what steps they are taking to support Canada's farmers in their Resolution to Exempt Water From the NAFTA. For the past two Februarys, I have traveled to Ottawa to brief Liberals, Conservatives, New Democrats and Bloc MPs on this initiative. All candidates should be up to speed. See if they are. And after the election

is over, make sure they know The Farmers' resolution to Exempt Water from the NAFTA is one campaign that is not going to go away.

Defending the rights of community over commodity has resonance for the world. It's Canada's turn to speak. . .

Wendy Holm may be contacted at 604-947-2893, holm@farmertofarmer.ca, www.theholmteam.ca. ✓

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How We Learned to Stop Hating and Learned to Love (Well – Appreciate) Earwigs

by Linda Edwards

Earwigs have a very poor image. The name earwig comes from a European superstition that these insects entered the ears of a sleeping person and bored into the brain. This belief is totally unfounded, but, along with their cruel-looking pincers, and their habit of appearing en masse in the doorways of unsuspecting homeowners, it has contributed to their unpopularity. However, they become much more attractive when you learn more about them.

Earwigs are not native to North America. They were introduced from Europe and Asia many years ago and have thrived in their new environment. They over winter as adults in subterranean tunnels in the soil, usually in pairs. They are unaffected by low winter temperatures. Towards the end of winter, the females lay 40-50 eggs and eject the males from the nests. The females tend the eggs and feed the nymphs that hatch pollen, leaves, aphids etc., for the first stage of their life. Parental care ends with the second moult when the nymphs, which look like the adults only smaller, leave the nest to go on their own. There is only one generation a year. The adults that over-winter die soon after the young leave the nests.

Females can be distinguished from males by the appendages (forceps) on the rear: on females they are straight while the males are curved.

Researchers have found earwigs can and will eat just about anything. Dog food is regularly used for lab colonies, though pollen and insects are preferred. They are nocturnal and will hide anywhere they find themselves for the daylight hours (which is why you may find them under your door frame). They have an aggregation pheromone: if one finds a good place to spend the day it releases this pheromone and



others are attracted to the site.

Even organic growers would like to eliminate earwigs before they find out the very important role they can play as biological control agents.

Their role as an important predator emerged during an area-wide pear research program carried out by a research and advisory company (Integrated Crop Management Inc.) in the Okanagan/Similkameen about 12 years ago, to find alternatives to the harsh and increasingly ineffective pesticides to control pear psylla. Earwigs kept getting into some of our small pear trees in cages experiments to assess the efficacy of other predators and ruining the

experiments by eating the psylla. So we set up some trials where we put Stikum around the trunks of some trees to stop earwigs from going up into them, introduced earwigs onto others and left some trees alone. Pear psylla levels on all of the trees was carefully monitored. Over and over again, the trees where the earwigs were excluded became more and more heavily infested while they declined on the other trees. The ones where earwigs were added "got better" only slightly faster than the ones where naturally occurring populations prevailed.



To speed up the process, some orchardists actually collected earwigs from apricot and peach trees by putting crumpled up newspaper or burlap bags in the lower limbs and going every morning to shake out the earwigs that had gathered there overnight into a pail and carried them to their pear blocks all the time muttering things like "I can't believe I am doing this".



Now years later, earwigs continue to provide stable and consistent control of pear psylla. There are many



other predators of psylla; however, when all of these reduce psylla to low levels, they either die off or move away because their food source is depleted. Earwigs, on the other hand, just switch to other food sources, including pollen and leaves, and are still there when the psylla start to increase.



I have also carried out a 14-year monitoring program in our orchard for obliquebanded and threelined leafroller. These are the leafrollers that overwinter as larvae. They emerge in the spring, feed on leaves and fruit and then pupate and go on to produce at least one more and sometimes two more generations over the summer. It is the summer generation(s) that can do the most damage. Damage from them is rated by conventional packinghouses to be the main cause of damage to apples and pears. By using sticky traps with pheromones in them, I establish year after year that there are second generation leafroller adults in our orchards every summer. Some may have emerged from

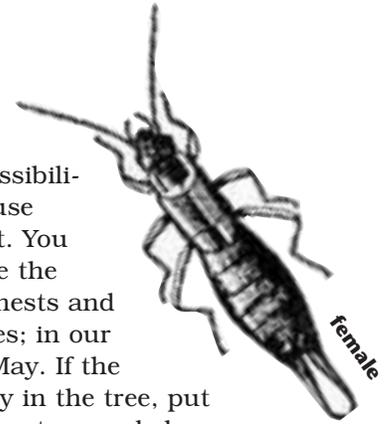


within the orchard from the overwintering generation. Others will have been attracted in from nearby wild trees and shrubbery or other orchards. However, year after year, no matter how hard I look, I find few or no leaf roller larvae and damage at harvest from the summer generation is always less than 0.5 %. Leafroller parasites are present but their numbers have declined over the years almost certainly due to low leafroller larvae numbers. The only predator I find in any numbers in the leaves and between fruit is earwigs.

I also realized a few years ago that even though there were (as established by the monitoring traps) many leafroller adults in my orchard, presumably mating and laying eggs, that not only was I not finding larvae I was not finding egg masses. These are about the size of a dime and if present, are easy to find. Apparently the earwigs were finding that to be the case as well omelets for breakfast, lunch and dinner.

Okay, okay! If you are growing apricots, nectarines or peaches, earwigs are not your friend and will do extensive damage to the fruit. Growers in our area are able to prevent this by wrapping the trunks of their trees with strips of shrink wrap and putting a band of Stikum around the middle of it. Earwigs can only get

into the tree by climbing up so if you cut off that possibility, they cannot cause damage to the fruit. You must do this before the nymphs leave the nests and get up into the trees; in our area that is early May. If the nymphs are already in the tree, put on the barrier and put crumpled up newspaper in crotches of the tree. Shake these out every morning until you don't catch any. Make sure weeds are not allowed to grow up under the tree, because the earwigs will be able to bypass the sticky barrier. Be sure, also, to remove the shrink wrap and Stikum after harvest, otherwise damage can occur to the trunk over winter.



The next time you see an earwig, try to remember that bad guys are also sometimes good guys!



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COABC Office Moves, Staff Changes

Kirsten Kane, our former Administrator, has changed roles: she has just been hired as the new COABC Business Manager. In the next few weeks, Kirsten will work with the Board of Directors to develop an action plan aimed at ensuring the COABC is in a sound financial position by this time next year. Kirsten will be responsible for implementing this plan. She also continues her responsibilities as administrator of the Organic Sector Development Fund.

COABC also has a new Office Coordinator to assist Kirsten. Juliana ("Jilly") Skelton will take over the work formerly done by Vivian McGee, along with some of the responsibilities formerly shouldered by Kirsten. Jilly brings a wealth of experience in the non-profit sector to COABC, including both organizational and organic farm management. She has taken responsible positions with environmental groups, both in Canada and overseas. Jilly also has considerable administrative experience. We are delighted to have her join the COABC team. ✓



From Left: Roz Cripps, PACS Administrator, Juliana Skelton, COABC Office Coordinator, Rob Korbynn, Webmaster, Kirsten Kane, COABC Business Manager, and Jennifer Bond, PACS Assistant
Missing from picture: Cara Nunn, NOAA Administrator.

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Dr. Hoitink will be the main speaker at a 1-day workshop in late October 2004 in Kelowna. It will be his first visit to British Columbia since the 1970s and he recently retired from his research position at Ohio State University.

For more information, see ad at left. ✓



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Storing those winter onions

Can anything lead to despair more quickly than the sight of hundreds of pounds of organic onions going to rot in storage? How many of us have watched helplessly as bags of onions rot from the neck down? After months of tending and harvesting, we are left with - not profit - but the work of disposing of all those stinking onions.

In order to store winter onions successfully, start by growing healthy onions. Suggestions from the Soil Association magazine *Organic Farming*, Autumn 2001:

- * Practice a four to five year crop rotation to help prevent soil-borne diseases, such as onion neck rot and fusarium basal plate rot
- * Use disease-free seed and onions sets
- * Avoid excessive levels of nutrients leading to lush growth, higher susceptibility to diseases and even premature sprouting
- * A healthy balanced soil will encourage a healthy crop that is resilient to disease. Soils with good levels of calcium are shown to reduce the risk of black mould.
- * Some varieties store better than others do. Characteristics to look for are long dormancy to avoid sprouting and a good covering of dry outer skins to help prevent disease entry and moisture loss. Buyers generally downgrade poor skins.
- * In addition, ensure adequate moisture throughout the growing season

Harvesting and curing is the key to extended storage life in onions. Here is how Snow Farms (Fraser Valley) harvests, cures and stores their commercial-size crop of winter onions:

1. Stop irrigating two to three weeks before harvest
2. Dig the onions when



half the tops are down (folded over) - in 2003 this was September 12th

3. Windrow the harvested onions (do not pile them) for five to ten days, depending on the weather - do not cover them during this time
4. Gather the onions when the green tops have withered and lost their colour (especially near the bulb) - the bulb should separate easily from the top
5. Top the onions at about three inches and place in slatted bins (slatted bottom and sides) no higher than 24 inches
6. The bins are placed in a covered building and heated air (28-30°C) is forced through them
7. The onions are monitored for 10 days to 4 weeks until the skins are cracked and the tops are completely dry
8. Cool the onions (in bins) to near freezing while keeping the humidity close to 70%. The only way to keep the humidity low (in the Fraser Valley) is to provide good ventilation.
9. The onions are stored under these conditions for the rest of the winter.

Large piles of bulk storage onions are ventilated by blowing air from below - lots of air movement is the key. During curing it is important to control the sweating (condensation) on the outside of the pile - do not introduce cold air

into a warm stack – use ambient air to ventilate.

For harvesting, Harvie Snow suggests a potato digger is adequate. The Snows have used a stationary topping machine (the onions are brought to the machine) but for large acreage, the harvesting machinery tops and digs at the same time. In this case, controlled curing is especially important. Harvie recommends Copra as an excellent storage onion, but First Edition also stores well. The Snows have stored Copra onions for ten months and were still selling 2003 crop shallots (perfect condition) in May of 2004.

For smaller crops of onions, the literature suggests:

1. Harvest when the weather is traditionally sunny and dry
2. Windrow the onions in the field with the necks intact - leave them there for as long as possible
3. Bring the onions inside when the skins are dry and crackly and what is left from the top

foliage sloughs from the neck. For most farms, this amount of outdoor curing is not possible. In this case, leave them to cure outside as long as possible and bring them inside with the necks intact as this reduces the risk of infection. There is evidence to prove that topping increases premature sprouting.

4. Hang them in plaits or lay them on pallets in a dry building. If you are not using any drying aids, do not pile them more than one layer deep. You may lay them one-layer deep in trays, but the trays must be stacked so there is lots of room for air movement. When they have cured sufficiently (dry skins, dry top) store them in slatted boxes or onions sacks in as cool and dry a place as you can arrange.
5. If you can use a heater or fan, stack boxes of onions to form walls on either side of the blowing air – use plastic film to bridge (seal) the end of the walls in order to force air through the boxes. You could do this with bags of onions as long as you are able to force the air through rather than over or around the onions.

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Preparing for market

- Onions for market must be clean and sized for grade
- Canada Grade No 1 onions must be between 44mm and 76mm in size – onions larger than 76mm may be marketed as Jumbo, onions between 32mm and 44mm may be marketed as small - this is a rough description, for grading details see the Fresh Fruit and Vegetable Regulations from the Canadian Food Inspection Agency.
- Prepare onions for market by cutting the foliage and rubbing off the excess loose skin. This process usually does all the cleaning that is necessary. Onions are cleaned in commercial quantities by machines with rotating ribbed rollers. Smaller amounts need to be cleaned by hand, or a root vegetable washing plant (running dry) may assist the process.

- Do not prepare onions for market until a few weeks before sale as the outer leaves will stain and darken in storage and cleaning process will have to be repeated before retail sale.

Points to remember:

- Grow onions in good soil with proper moisture – irrigate when necessary
- Stop irrigating 2 - 3 weeks before harvest
- Harvest during sunny, dry weather
- Windrow the dug onions, do not pile them
- Unless you are using heaters for drying, leave the necks intact during curing
- Cull thick necks and double-bulbs and any defective onions as these are the ones that will cause problems in storage
- Store cured onions at as close to freezing temperature as possible, with lots of ventilation



Technical Guidelines for Drying Onions

At Woodlands Organic Farm, Lincolnshire, 20 ha of pre-harvest onions are kept in the field with 7.5cm of stalk. "Onions are left in the field for a day or two to wilt for 48 hours before grading to clean the crop, and then storage," explains Michael Summerland, farm manager. "The 'three inch stalk' rule prevents disease entering the neck, causing rot." Sherpa and Red Baron varieties are grown.

Maximum height for storing bulk onions is 3.5m – any higher and misshapes or damage may occur. "You won't have a round bulb but a flat-sided one, which the customers don't like" comments Mr. Summerland. A ten-day curing period of 28°C and 75% humidity dries the crop as quickly as possible. "Anything less might lead to neck rot, while anything more - up to 32°C, say – and the onion's cell structure will break down."

It's crucial to keep temperatures at 28°C for the first three days, before you bring it down to 25°C. However, it's important to maintain 75% humidity – as the crop dries you are removing moisture." After ten days, temperatures are gradually brought right down. "If it's 15°C outside and we can't take it down lower, we switch on the chiller and bring it right

down to zero." This is essential because in organic onion storage, no chemicals are allowed to stop re-growth and chitting. "Everything has to be done as quickly as possible in the curing period – but not too fast, as reducing the temperatures by more than 1.5°C in 24 hours can break the onion cells."

Woodlands Farm has 300 and 600 tonne storage rooms. Onions are graded into 40-60 and 60-80mm sizes preferred by customers - the smaller onions go for pickling.

Mr. Summerland estimates the most expensive part of storage is heating. "Gas heating is better than diesel, as it's possible to produce 28°C within two to three hours. Diesel burners take too long to reach 28°C – you might create neck rot in the store." Heating makes up about ten per cent of costs.

One way of reducing heating costs is to leave onions to dry on hot sunny days – but someone has to listen to the weather forecasts! "If you leave them out on silty soil and it rains, that will leave a stain and they won't look good for sale" Mr. Summerland explained.

Reprinted with permission Organic Farming - Issue 71 Soil Association

A New Meat Regulation?

by Cathleen Kneen

The Provincial Government is in the process of introducing a new regulation to cover slaughter of animals. It was sparked by the BSE crisis and spearheaded by the Ministry of Health, with the goal of ensuring a safe meat supply by imposing Federal inspection standards on all animal slaughter. While the goal is commendable, the regulation has received considerable criticism from farm and food security groups.

The core of the critique is that the requirements are too expensive (and unnecessary) for small-scale, local abattoirs and will result in a further centralization of meat processing, to the detriment of local food security. Furthermore, they say, the regulation will not even address the problem (BSE) since BSE can be identified only by analysis of brain tissue and the proposed inspections are inadequate for that purpose.

The Island Farm Alliance, together with community groups led by the Capital Region Food and Agriculture Initiatives Round-Table (CR-FAIR) have presented a brief to the government. There was no response by early June, although Kersteen Johnston (Executive Director, Health Protection) says that feedback and comments have been shared with Ministers Hansen and Van Dongen and they are awaiting further direction.

The brief says that the Regulation, as proposed, is far too costly for a very large proportion of BC's small- and medium-scale meat producers and processors, and is suitable only for large-scale centralized establishments. These are incapable of addressing the needs of local small- and medium-scale farmers, purveyors and restaurants.

It continues: "The safety of meat begins with how animals are raised. Small- and medium-scale producers tend to grow their animals under less concentrated and therefore less stress- and disease-prone conditions than larger-scale producers. Thus their animals' feed requires fewer sub-therapeutic antibiotics and fewer high-protein supplements (which can include animal byproducts and lead, potential-

ly, to BSE). Certified Organic operators, for example, are not allowed to use any synthetic chemical inputs and are required to provide humane and healthy conditions for their livestock.

"The same scale issues apply at the slaughter and processing end of the chain. In large-scale centralized establishments, the volumes and associated speed of processing pose hazards to animals, workers, and the meat. These hazards do not apply in small-scale, hands-on operations. With local slaughtering, animals are not transported long distances, thus reducing their stress levels and enhancing meat quality.

"Small- and medium-scale agricultural producers throughout BC play a large role in maintaining critical agricultural infrastructure, in providing local jobs in production and processing, and in supplying local restaurants, retailers, and consumers with a wide variety of high quality, safe, ethically produced food, for which there is ever-increasing consumer demand. Local small- and medium-scale meat establishments are integral to these local food systems."

The community groups recommend a Meat Inspection Regulation with the following characteristics to appropriately address all scales of meat slaughter and processing:

Proper slaughter and processing establishments*:

- health and safety regulations suitable for small- and medium-sized establishments, including on-farm and mobile facilities

Trained and certified abattoir operators:

- somebody certified in and responsible for food safety on site during all operating hours
- local training programs available possibly through local colleges

Trained and certified meat inspectors

- Monitoring (quarterly? as well as unannounced) of meat by government-certified meat inspectors throughout slaughter and processing
- Inspection of slaughter and processing establishments (quarterly? as well as unannounced)
- Complete traceability and accountability for all slaughtered and processed meat

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BSE protection:

elimination of all animal byproducts from animal feeds

development of a government facility for the testing of all slaughtered cattle for BSE appropriate tissue samples from all cattle to be sent to the facility and tested for BSE

Provincial audit of the meat inspection process:

occasional review of the meat inspection process to ensure food safety and industry viability

* Note: "establishment" means any abattoir, slaughter house, packing house or other premises in which animals are slaughtered, or in which portions or products thereof are prepared for food, or are stored.

Adoption of such recommendations and consultation with affected meat businesses can quickly lead to improved food safety, stronger agri-food infrastructure and healthier local economies. A more decentralized, fully traceable meat production and processing system is possible. Among other benefits, it would permit isolation of problem areas in future disease

outbreaks. Instead of commodities being wiped out for the whole province, one region could come to the aid of another.

For further information, contact: Lyle Young, Cowichan Bay Farm (250) 746-7884 Mara Jernigan, Engeler Farm, (250) 743-4267 Pat Reichert, Salt Spring Flour Mill, (250) 537-4282

Signatories

Member organizations of CR-FAIR: BC Government and Service Employees' Union, GroundWorks Learning Centre, Growing Green Project, LifeCycles Project Society, Small Scale Food Processor Association, TLC The Land Conservancy

Representatives on CR-FAIR Steering Committee: Ministry of Agriculture, Food and Fisheries Vancouver Island Health Authority

And BC Food Systems Network * Council of Canadians * Beyond Factory Farming * Direct Farm Marketing Association (SVI) * District A Farmers' Institutes * FarmFolk/CityFolk * Healthy Eating Active Living Project * Island Farmers' Alliance * Kamloops Food Policy Council * Kelly Creek Organic Producers * Northern Health Authority Medical Officer of Health * Peninsula Agriculture Commission * Powell River Agricultural Association * Powell River Womens' Institute * Slow Food Vancouver Island



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Approval of Organic Pesticides

by Linda Edwards

In a perfect universe, no pesticide inputs would be needed for producing organic food. Unfortunately, there are some crops, in some years and in some locations, which cannot survive the pests and diseases without intervention.

Because of the restrictions inherent to organic certification, there will always be a limited number of pest and disease control products for organic growers. Also, because organic production is a small part of agriculture, relatively little research is directed to finding organic solutions to pest and disease problems. Canadian organic growers are even more at a disadvantage. Anyone who knows organic growers in the US or reads organic magazines and newsletters from down there knows that their American counterparts have access to many products that they do not. The OMRI Brand Names List contains many products registered in the US and approved for organic use that are not registered for use in Canada.

There are two main reasons for this. The first is that efficacy tests to determine if the product does what the manufacturer says it will are not required in the US, but these tests are required for registration in Canada. In regards to product safety, the Environmental Protection Agency (EPA) in the US requires all products be thoroughly tested for toxicological effects to humans and the environment, which is similar to what is required in Canada. The second reason is that the market for any product is much smaller in Canada than in the US and often companies do not feel that the returns they would get for products sales would not justify the cost of registration. This of course is particularly the case for Canadian organic products.

In addition, sometimes a product is registered for pest control that can be used by organic growers but it is only registered for some specific pest and/or crop and not others. For example, Dipel (*Bacillus thuringiensis*) is registered for leafroller on apples but not cutworms on grapes. Therefore it cannot be legally used on grapes. Organic growers, just like conventional ones, are not exempt from only being

able to use registered products for registered uses. This is a requirement of both the organic standards and Health Canada (PMRA).

So is there anyway that the above problems can be addressed? Yes! One way is through the Minor Use Pesticide Program which is working to improve access to these "minor use" pesticides products used on low acreage crops, or for small or intermittent uses on large crops. Agriculture and Agri-Food Canada has allocated \$16.8 million to be spent over the next 6 years for a Pesticide Risk Reduction Program, which includes their new Minor Use Pesticides program. The intent of this program is to develop pest management tools based on priorities identified by growers, associations, and the provinces. Tools include biological controls, natural products and low risk minor use pesticides. Agriculture and Agri-Food Canada (AAFC) is working with provincial authorities, industry representatives and producers to match pest problems with minor use solutions; establish priorities and gain the support of registrants (chemical companies) for potential solutions; generate efficacy, crop tolerance, and residue data; and then develop minor use packages for submission to the Pest Management Regulatory Agency (PMRA), Canada's body responsible for pesticide registration.

The first step is to gather information on priority crops, to identify what is available and what data is needed. Meetings are held throughout the country each year of producers and producer groups in each province with the provincial minor use coordinator to identify and prioritize major weed, insect and disease problems in their region. These pest problems are then matched with potential solutions. Provincial lists are then combined to form a national list.

Once the priorities are established, AAFC, in consultation with industry, seeks to involve the manufacturers, conduct field trials where necessary, and submit registration submissions to the PMRA. A meeting is held in Ottawa with representatives from across the country to make the final decisions on priorities. Ten her-



WHAT IF EVERYTHING WAS LABELED LIKE GENETICALLY ENGINEERED FOODS?

Canadian Law does not require labeling of genetically engineered (GE) foods. In the past, the Canadian Government's position has mimicked that of the U.S.A; that genetically modified food should not have to be labeled if it is substantially equivalent to an existing food in nutritional value and intended use.

Currently the only likely way to keep GE food off your plate is to eat organic or buy food that has been voluntarily labeled. Unfortunately, this still leaves us eating many foods that have been genetically modified without our knowledge.

There is strong scientific evidence of numerous potential health and environmental risks from GE foods. There is a lack of long-term studies that have assessed the risks that GE

foods pose on the environment, food safety, and resulting new allergens. Genetic drift through cross-pollination threatens contamination of neighbouring farms and, in the process, inadvertently altering existing non-GE crops.

Capers Community Markets has taken a three-pronged approach to GE foods. First we require an extensive paper audit trail on any product that makes GE-free claims. Second, we continually work with and encourage suppliers to find non-GE sources of ingredients. Finally, we take an active role in finding alternative food products that have been developed without the use of genetic engineering.

