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HOUSE COMMITTEE PROCEEDINGS**

COMMITTEE: STANDING COMMITTEE ON AGRICULTURE, FORESTRY & ENVIRONMENT

Wednesday, February 23, 2005

SUBJECT(S) BEFORE THE COMMITTEE:

Further consideration of Motion No. 30 concerning GMOs (genetically modified organisms)

NOTE:

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COMMITTEE

MEMBERS PRESENT:

Wilbur MacDonald, Chair
Wayne Collins replacing Hon. Mitch Murphy
Wilfred Arsenault
Andy Mooney
Eva Rodgerson
Fred McCardle
Richard Brown
Ron MacKinley

GUESTS:

Part I - Dr. Ann Clark
Part II - Denise Dewar
Part III - Renata Brillinger
Part IV - Dominique Cruchet
Part V - Sandra Boswell

STAFF:

Marian Johnston, Clerk of Committees
Louise Polland
Bob MacGregor

Standing Committee on Agriculture, Forestry & Environment
Wednesday, February 23, 2005
1:30 p.m.

Part I - Dr. Ann Clark

Wilbur MacDonald (PC)(Chair): I'll ask the committee to come to order. First of all, we should have an agenda to approve our agenda for today. Can we have a motion to approve?

Richard Brown (L): So moved.

Wilbur MacDonald (PC)(Chair): So moved. All those in favour signify by saying, aye. Contrary, nay. Motion carried. I just want to deal with one little issue. We've had a request from an individual to come and to - What's the word?

Marian Johnston (Committee Clerk):
Videotape.

Wilbur MacDonald (PC)(Chair): Videotape the proceedings. This is an individual that we'd have no control over so it's not tradition that we do that.

Richard Brown (L): Must be a part of the government, is it?

Wilbur MacDonald (PC)(Chair): The media is allowed because that's in our rule book; but otherwise, it's not so could I have a motion not to accept or to allow - They have the right to go out into the hallway and interview anybody they wish but not when in here.

Wayne Collins (PC): Mr. Chairman, I think you know this committee is open to the public. I think that's great. The media's here and they're shooting video as well but they have a stated purpose to be here representing that other state and we welcome them here but you're right. I think the loss of control over what happens to the images once they leave this room is important because we're not necessarily dealing with a media outlet and I would certainly move that motion that there not be videotaping other than by what is sanctioned within the rules.

Wilbur MacDonald (PC)(Chair): Okay. Agreed?

Unidentified: (Indistinct)

Wilbur MacDonald (PC)(Chair): I'm sorry. I'm sorry, dear. The committee's (Indistinct) and I have to deal with the committee first and we have rules to follow and rules is that videotaping or anybody else proceeding into the room is not under our control. We have some control over the media. They are responsible people but we don't know what will happen. Somebody can take a tape and redo it or do whatever but they're free to do whatever they like in the corridor, interview some of the witnesses or anything at all, but we don't want another videotape in the room and that's agreed upon?

Some Hon. Members: Agreed.

Wilbur MacDonald (PC)(Chair): Okay. Thank you very much.

First presenter today, I think you're Dr. Ann Clark, right, from the University of Guelph, the Department of Plant Agriculture so we welcome you here today. I'm so pleased to see you. You have a presentation and I guess the order that we usually go - you make your presentation and then we'll ask if it's okay for the members to ask you questions.

Dr. Ann Clark: Certainly.

Mr. McCardle (PC): Is she representing the University of Guelph?

Dr. Ann Clark: No.

Wilbur MacDonald (PC)(Chair): You're an individual.

Dr. Ann Clark: I'm speaking only for myself. I do not represent my department or the University of Guelph.

Wilbur MacDonald (PC)(Chair): Okay. Could you give us a little background before you start and then?

Dr. Ann Clark: Background on myself?

Wilbur MacDonald (PC)(Chair): Yes, dear.

Dr. Ann Clark: Okay. I'm an associate professor in plant agriculture at the University of Guelph. I've been there for 22 years. I teach four courses and I do research in pasture and grazing management in organic agriculture and that's what I'm paid to do and then I've been working for - since 1987 to communicate concerns about genetically engineered crops and I work with a group of Canadian academics and government employees and retired people across Canada. We're called GE Alert but I'm really here just speaking for myself.

Wilbur MacDonald (PC)(Chair): Then if you would proceed with your presentation, it would be fine and open it up for questioning.

Dr. Ann Clark: Okay. So I've entitled this talk, "Whose interests are served by agricultural bio-technology?"

And for a long time everybody was free to say whatever they wanted about bio-technology because we really didn't have a track record to use and I think it's very important for us in this room to recognize that North Americans, and in particular Americans and Canadians, are the only two places on the planet that actually have a practical record of experience upon which to make a judgment about the effectiveness or not of GM crops. And many people in the world are watching to find out how well we have fared or not with GM crops so this is a very special time.

We have nine years of experience now to determine if the optimism of Canadian jurisdictions and American jurisdictions in support of GM crops is justified and, in particular, if the very tight linkage that has developed between industry and government in support of GM crops can in fact be reconciled to the benefit of Canadians of society as a whole because they really have two very different purposes. Corporations by definition, their purpose is to make money and government, by definition, is to serve the people, serve the interests of your jurisdiction. So can these two interests in fact be reconciled or not? We don't have to guess any more. We have nine years of experience to call upon to look at that.

And I guess the other point I would make here is that the premise underlying agricultural bio-

technology was that farmers were going to benefit from this first wave of traits that were introduced into GM crops and I want to challenge that premise for you today with the evidence that we have.

The main points that I'm going to make today is that AgBiotech has been released prematurely into commerce. It has been oversold with many promises made that have not in fact been recognized or realized in practice with the available evidence that we have.

Secondly, that bio-technology prolongs ecologically dysfunctional production systems and therefore is not in the interests of society or the environment as a whole; and thirdly, that we have a lot of concerns in agriculture, which are not being addressed and, in fact, may be exacerbated by bio-technology.

Net economic return to farmers in Canada as a whole has been below zero for two years running now and part of the reason, although by no means all of the reason, is the amount of money that bio-tech costs without a return in the form of increased returns. So these are the main points that I want to make to you today and I'm going to back them up with evidence. This is not just opinion. This is actual documentation.

Just to make sure we're all on the same platform here, first, what do I mean when I talk about a GM cultivar and then with respect to the rest of the world, who grows it? Which actual crops have been modified and commercialized, which traits have been commercialized, and then has it in fact delivered to Canadian farmers the actual clientele for these first wave traits in either Canada or the U.S. so that's what I'm going to talk about.

So first, what do I mean when I say a GM or GE or a transgenic cultivar? All three of these will be used interchangeably although they're used slightly differently by different people. First thing you have to recognize is that a genetically modified cultivar is in fact an ordinary cultivar, ordinary, the elite, the best cultivar that you've bred everything into it, the yield, the standability, the nutritional quality, the maturity, flower colour. Whatever it is you've bred, you've done it conventionally using conventional plant breeding all the way through its whole life; and at the end, you've got this elite product and at the very end, you insert a transgenic trait and that makes that

cultivar a GM cultivar.

So I particularly want you to understand that everything about it is not GM until the very end when you insert whatever the trait is, okay. So the only point that's engineered is that last trait. Everything else is conventional.

How popular is genetic modification on the planet? There are a total of 68 million hectares of land that are sown in the year 2004 according to the Pew initiative. Just three countries account for 90 per cent of all the land sown, the hectareage sown to GM crops. The U.S., Argentina, and Canada, just six countries account for 99 per cent. So very few countries on the planet have chosen to adopt genetic modification within their agriculture.

What's been approved, what particular crop types have been approved in Canada? There's about 15 different crop types altogether that have been approved at one time or another but only three of them are actually grown in Canada on 99 per cent of the acreage that's sown in Canada: corn, canola, and soybeans. The rest - and I should just quickly back up just for a minute. Some of what I'm calling genetically modified under corn or canola is actually produced through mutogenesis so there are a few of these that were mutogenic rather than transgenic but for today it doesn't matter.

These other crops have been approved but were never grown or have been withdrawn. For example, cotton was never grown; therefore, cultivars that were approved, flax was never grown. It was withdrawn by the insistence of Canadian producers. They refused to allow it to be commercialized, specifically because their primary market is Europe and they would lose that market if it was genetically modified and then there are some new ones, some wheat and other things that have also been approved and are not yet in the marketplace.

So in essence, we have six countries growing genetically modified crops on the planet and there are three crops that are grown in Canada that account for 99 per cent of the land sown and there's one other crop that we don't grow that's also important globally, and that's cotton.

Which traits have been commercialized? You hear an awful lot about the promise, the promise of

genetic engineering, and I agree it is promising. There are many, many very interesting things that could come from genetic engineering but the word, underline the word "promise". And we've been hearing about this promise now for 20 years. So what do we actually have in commerce today? There's actually only two traits: herbicide tolerance, and almost all of that is Roundup Ready. There's also Liberty Link, which is glufosonate ammonium tolerance, a different herbicide and a few others but it's almost entirely Roundup Ready, which is glyphosate.

So herbicide tolerance is one of the traits and BT is the second trait. And there are two kinds of BT: the one that focuses on moths and butterflies, lepidopteron, and that's what accounts for almost everything in the market today; and then a new one that's just come out in the last year which focuses on root worm. So BT and herbicide tolerance, that's 100 per cent, well, 99 per cent of what's in the market place today.

So what that means is from a societal perspective in Canada and in the U.S., in particular, we've spent 30 years and many billions of dollars of taxpayer money, let alone industry money, many, many thousands of person years of research time concentrated specifically in agriculture biotechnology and we have as a result two commercialized traits in four industrial crops. These are not directly human consumable crops; they're all industrial. They all have to be processed before they can be used in six countries and that's what we have to show for this investment of societal resources. So this raises many questions in my mind. If GM was that fantastic, if it was as great as we are told by industry, why in the world is the planet not jumping on this bandwagon. It would make perfect sense to me that they would.

You will hear that NGO groups have been fomenting unrest and resistance to it but I would argue that it's unlikely that any NGO could be that powerful that, in fact, there may be other reasons, some of which we'll talk about right now, why the rest of the planet is not picking up this technology. And as a result, it's not that, it's not because it's expensive or because it's proprietary or anything else. It actually doesn't work and it actually has not been found to be safe when it's been tested. It's hardly been tested, contrary to what you may hear and they're just not prepared to go with it.

They don't see the need for it. They don't see the benefit from it and as a result, Canada, I would argue is increasingly being perceived not as the leader of the next way of agriculture in the future in some positive sense but rather as a bully and this is really an unfortunate role to be put in and it's partly because of our relationship with the United States.

So I think this is really important for you to be thinking about in your deliberations and, in fact, have we been fed a bill of goods by people who have a very strong interest in us accepting this technology.

Okay, has it actually delivered in Canada at the farm level, at the level of the clientele for first wave GM? In fact, nobody knows and I find this very peculiar. There is no federal or provincial agency that has yet commissioned a survey of the on-farm experience - at least it's not published. It's not available to the public - of how well GM crops actually perform in Canada and this is incredible. Canada, in its various jurisdictions, is spending in the vicinity of \$700 million a year of taxpayer money, my money, to support this technology and yet they've never gone out to find out if it works. This is very bizarre. Maybe you can explain to me why it is. What we can show though - and this is farm publicly available information - global rejection of what we are doing, particularly in canola.

This information comes from the Council of Canadians, sorry, Canola Council of Canada website and this is just lifted straight off of their website looking at sales of Canadian canola oil; and I've plotted this over time. GM really came onto the market in a big way in '97, '98 and you can see that everybody except the U.S. has backed away from buying Canadian canola. Very recently, China has started to pick it up again but that's it. So we are currently very dependent on a single buyer for a major agricultural commodity in Canada and the rest of the planet doesn't want to buy it. Since when do people have to buy something just because we want to sell it? They don't. They go somewhere else and we lose market share and that's exactly what's happened with Canadian canola, one of the four crops that has been genetically modified.

It's not just Canada. What happened in Europe with American corn? The red bars are imports of

corn in Europe over the last 10 years and you can see some variation, some reduction in the middle when they decided they did not want to buy American corn because it was genetically modified. Again it came on the market in '96, '97, '98 in a big way so the fraction of their corn that they bought from the U.S. is shown with a bar, sorry, the line that goes, starts at the top and it ends at the bottom. So they're essentially switching to somebody else. They buy corn from somebody else. America has lost market share in terms of corn. Again, why should they buy? Why do they have to buy it just because we want to sell it?

So has AgBiotech delivered in the U.S.? We really don't know about Canada because other than people rejecting what we're producing, we have no way of knowing. Does it in fact increase profit? Does it in fact increase yield? Does it save the soil? Does it reduce pesticide use? Does it do any of the things that we were told when this product was brought into the market place 10 years ago that it would do for us? These were the benefits that were promised - be feeding the world better. Are farmers making more money?

Like I say, we don't know in Canada because nobody is tabulating that and I would suggest that that's an important thing. What about in the U.S.? Well, the U.S. has made a more substantive effort to quantify performance on the farm. They go out and do surveys about every two years, the most recent one was in 2002. These are ag economists, Fernandez, Cornejo and McBride. I will also cite evidence from Chuck Benbrook. He uses USDA databases and, in fact, he commissions the USDA to do analyses for him so these are not private individuals. These are not anything like that. They're all using institutional data collected by the USDA and then I'll also report something that was reported at a soybean meeting last year by Eliason of Illinois.

Now who is it that says AgBiotech has delivered because there are populations of people who fervently argue that this is the greatest thing since sliced bread. Well, they tend to be lobby groups and, in particular, the National Center for Food and Agricultural Policy and if you look at their website, as I did, you will find they are funded by in addition to governments and foundations - This is a direct quote: Commodity groups, agri-business, and agricultural chemical companies. So when you

see something published by someone named Gianessi or Carpenter, for example, or those names are in the author list, it comes from a group that is funded by those with a vested interest in this technology. Also other researchers who are funded by industry, these are the people that are saying that this technology is working and there are people saying this and they do publish reports.

But how much confidence should you have in something is coming by way of industry funded research or syntheses? And I've just listed some of the sources here and I give more in the written text for this paper, which your secretary has a copy of so you can look them all up like I did. These are all in the bio-medical field but I don't think they're any different than in the agricultural field and there are dozens of studies showing that when industry funds a research project of some sort, the outcome is biased in favour of industry and it's done in a very - These are all from the scientific literature. These are all scientifically sound, statistically sound studies showing that industry funding introduces a bias in the outcome so the confidence that you should have when an industry spokesperson stands up and talks to you should be tempered by the knowledge that there's a lot of evidence that what they say is tempered by their goals, by their objectives. It's perhaps not surprising but it's nice to see that people have actually studied this and can actually document it rather than just intuiting it.

Alright, yield - do GM crops produce higher yield? Well, it would be surprising if they did 'cause they're not bred for yield. They're only bred for two traits: herbicide tolerance and BT. So the only way you can increase yield with those two traits is if you have such a huge weed problem that you can't control the weed using other methods or it's so expensive that it becomes prohibitive.

So if you have a huge weed problem, then herbicide tolerant crops can be very beneficial. BT - the only way that BT can increase yield is if you have a big problem with the target of BT, which is European corn borer in corn or in coleopterans like Colorado potato beetle in potato. So how often do you have a big problem with European corn borer? Well, it's not very often so farmers essentially are spending -

Andy Mooney (PC): (Indistinct)

Dr. Ann Clark: Yes sir.

Andy Mooney (PC): How often do you have a problem with European corn borer?

Dr. Ann Clark: European corn borer in corn. That's right.

Andy Mooney (PC): I know in potatoes it's devastating, us, here.

Dr. Ann Clark: European corn borer?

Andy Mooney (PC): Yes. It's just laying in field after field down here if we're not on top of it.

Dr. Ann Clark: In potatoes?

Andy Mooney (PC): Yes.

Dr. Ann Clark: Really, interesting. Okay, fair enough.

Ron MacKinley (L) (Chair): Just one thing. I'm a farmer too. I don't know if it pays. I really don't know if it pays to go out and spray for European corn borer. We have done it. Our neighbours have not done it and whether it actually affects the yield as much as we think -

Dr. Ann Clark: It actually doesn't pay in corn. I don't know anything about potatoes I'm afraid.

Ron MacKinley (L) (Chair): I don't know but you got to, the timing's got to be perfect timing, perfect.

Dr. Ann Clark: That's the problem. That is the problem so as a result, it's a really, in corn at least, it's a really dumb trait to put in corn with the objective of reducing pesticides because we don't spray for it in the first place.

Ron MacKinley (L) (Chair): What do they spray corn with?

Dr. Ann Clark: You don't spray it. You don't spray for European corn borer at all.

Ron MacKinley (L) (Chair): No, but what do you spray for insecticide?

Dr. Ann Clark: What you're using pesticides on corn for is root worm. That's what over 95 per cent

of the pesticides on corn are used on root worm.

Fred McCardle (PC): How do you control European corn borer?

Dr. Ann Clark: Well, you don't. Historically, you don't. There's genetic variability so there are hybrids that are more resistant than others but you just live with it. But actually, I'm getting off topic because that's another point so let me just 'cause I'm trying to stay on time here. Let me just get through here.

Okay, I think I'm going to leave out the symptom and causal stuff. I'd be happy to talk to that later 'cause it's an important point but I just want to make it clear that these things are not bred for yield so when people claim they're higher yielding, it's got to be indirect through controlling the thing that's detracting from yield, the weeds or the pests, whatever it might be.

So do they, in fact, increase yield, Benbrook using USD analyses showed in fact soybean yields, GM soybean yields are less; they're not more and this is true with or without weeds. If you hand weed them, they yield less than the ones that are not genetically modified. So this is an example of an unintended trait. The Roundup Ready trait acts on a very major metabolic pathway and when you mess with a major metabolic pathway, you influence other traits which affect yield adversely. So if you have questions, we can go into that but the point is it's less; it's not more.

BT corn, there is a modest yield advantage when you have a European corn borer problem and it's at least in part because one of the unintended side effects of BT corn is that it increases lignan content in the stem. This is an examples of an unintended side effect that's been official in terms of keeping the corn up and keeping it from lodging but most years there isn't an advantage. When you do isoline comparisons, things that are genetically identical except that it has the Roundup Ready trait or it doesn't, they yield less or no difference so they don't, as a rule, yield more. This was a particularly interesting - Sorry?

Ron MacKinley (L): (Indistinct)

Dr. Ann Clark: You were talking while I'm talking, ooh! It's a good thing we're not in class, boy. It's a good thing we're not in class or you'd be in the

corner, you know.

Wilbur MacDonald (PC)(Chair): We have, we have four more presenters so I don't -

Dr. Ann Clark: Alright. This is a very interesting set of data from the USDA. Again, these are all USDA data and this guy plotted soybean yields in the US so these are US annual soybean yields, lot of flutter around the line. But between '72 and '92, it was increasing at almost a half a bushel an acre and then when you released GM soybeans, Roundup Ready soybeans predominantly, it flattens. So the question that he asked is: Has the introduction of Roundup Ready soybeans in fact retarded yield, prevented the continuation of increasing yield in soybeans in the US? I would need to see a few more years before I would support that argument because, as you can see, there's a lot of movement around that line but it is very consistent with all of these research station trials showing that the Roundup Ready trait actually depresses yield. It certainly doesn't increase yield.

What about biocides and when I say that, I mean all of the "cides": the herbicides, the pesticides, the pneumaticides, everything. Again going back to USDA databases, they worked very hard to find a 2.5 million pound reduction in biocide use in the year 2000 as a result of growing anywhere from a third to two-thirds of those four crops as GM and it was primarily BT cotton that actually was beneficial in reducing pesticide use. But that 2.5 has to be viewed in the context of the 327 million pounds of biocides that the US applies annually to those three crops so that's a barely detectible point seven percent reduction from transforming their agriculture to be anywhere from one-third to two-thirds of each of those crops being GM. So in essence, this does not support the premise that GM reduces pesticide use.

Benbrook again looked at this over eight years and the cumulative effect of GM crops in the US was to increase total biocide use by about 50 million pounds cumulative over eight years but the interesting thing is he broke it down by time frames. The first three years it was beneficial. It reduced pesticide use. The last three years it increased it by a substantial amount. Why? Specifically, because of resistance in the target organisms and, in particular, weed resistance. Those of you that are farmers will know that

glyphosate works at a much higher active ingredient rate than the competing herbicides for soybeans that work in just ounces per acre.

So number one, you're applying a lot more active ingredient but when you're applying only glyphosate and you're not rotating herbicides and doing all the things that you're told to do 'cause you don't have a choice 'cause that's the only thing in the market place, you generate resistance in the target weeds and there are now seven weed species that according to the international weed science society are now have biotypes that are resistant to Roundup and this is exactly what will happen with BT crops. And it doesn't matter that it's inside the plant as against being sprayed on the plant, when you're posing a strong selection pressure by applying that BT or that Roundup or whatever year after year after year after year, you're screening for resistant individuals and they increase and you have a problem. And that is why we are using more and more and more pesticide as a result of GM crops, specifically because we're accumulating these resistant weeds, these tolerant weeds.

That means more applications, higher rates, more tank mixing with other herbicides, all of which were generated by over-reliance on Roundup Ready crops. So this is a self-defeating, self-curtailling technology and this illustrates how this is building, how the momentum is building in weed populations. These are all of the bio-types around the world that have been identified as now being resistant to Roundup and, actually, three of them now have multiple resistant. They're each resistant to one or more other herbicides in addition to Roundup so this again is a very self-defeating technology. It's a short-lived technology.

What about money? Do farmers in fact make more money? This is important. As I said, net farm income in Canada is below zero. This is important. This is a direct quote out of the USDA research Fernandez, Cornejo and McBride: Perhaps the biggest issue raised by these result is how to explain the rapid adoption of GE crops when farm financial impacts appear to be mixed or even negative. Even more puzzling, the adoption of herbicide tolerant soybeans and BT corn has been rapid even though we could not find positive financial impacts in either the field level or full-farm analyses.

They also say adoption of herbicide tolerant corn improved farm net returns due to seed companies setting low premiums to expand market share. Adoption of herbicide tolerant soybean did not have a significant impact on net farm returns. It makes it a lot easier to control the weeds but they don't make more money at the end of the day. Adoption of BT cotton had a positive impact but BT corn - and again we only grow two of these that they're talking about in Canada, corn and soybeans - BT corn had a negative impact on net returns and that's because the seed costs so much more and you don't get European corn borer every year so you have to pay for that extra seed every year but you only get the benefit the years that you happen to have a European corn borer infestation. So I guess maybe we're shipping them all off to the potato fields so you guys can have them.

Ron MacKinley (L) (Chair): Yeah, but that's the thing if we can take a question. If you had corn, BT corn, and it kills the European corn borer but maybe you don't need it every year, these corn borer, if the corn borer gets in the corn fields, then it moves into your potato field.

Dr. Ann Clark: If they're adjacent to each other, that's probably true.

Ron MacKinley (L) (Chair): In PEI the land's all close and farmers -

Dr. Ann Clark: So you guys better never grow corn then.

Ron MacKinley (L) (Chair): Well, I'm just telling you that people do grow corn.

Dr. Ann Clark: Well, you know what -

Ron MacKinley (L) (Chair): Never or not but that's one of the problems we have and then I'm not sure if there's been enough study done on spraying corn for corn or not corn but potatoes 'cause it's awful hard to catch that window when you do it. But if you had corn fields, you're more apt to get corn borer in them fields and if you really get a bad dose of corn borer in the potato field, you're going to lose 50 per cent of your yield, you know, if it really takes off and it could. It comes basically being close to potatoes..

Dr. Ann Clark: I'm not going to argue with you 'cause I don't know a darn thing about potatoes,

okay, so I'll believe you. Okay, with respect -

Ron MacKinley (L) (Chair): No, but I want it explained out like you're talking here of soybeans year after year.

Dr. Ann Clark: Well, not necessarily. These are as done by farmers in the field.

Ron MacKinley (L) (Chair): No, but you were saying, well, you did say growing soybeans so you get resistant to weeds if you grow it and you go with soybean ready, you get resistance to weeds.

Dr. Ann Clark: Well, you, but there's Roundup Ready corn as well so people are growing Roundup Ready corn, Roundup Ready soybean, Roundup Ready corn, Roundup Ready soybean or using glyphosate as a burndown, you know.

Ron MacKinley (L) (Chair): But in PEI you can't go soybeans, corn. We have crop rotation in here and normally what the plant would be would be soybeans, probably grain into hay and it's another three years.

Dr. Ann Clark: Okay, well, this paper, this here is for you then because there was a proposal to put Roundup Ready wheat in the market place and Harley Furtan is the chair of Ag-Ec in business in Saskatchewan found if you, in fact, did that Roundup Ready wheat in Canada, it would lose adopters and non-adopters about 46 and \$32 million respectively a year; and it would bring a positive \$156 million into Monsanto and this was a modeled study. This is not yet in the market place and it's not because it doesn't work. He assumed that it worked perfectly.

They would lose the market is what would happen because 85 per cent of the people who buy Canadian wheat have said they will not buy it if it is genetically modified. They will go somewhere else so it isn't that it doesn't work in his modeling that he's coming up with here. He's saying we would lose that much market and the price of our wheat would go down and that's how much - Whether you adopted it or you didn't adopt it, you would lose because it's all co-mingled. You can't segregate one from the other and say: I'm selling non-GM wheat. Buy it and pay the higher price. You can't do that in the Canadian system so this is a negative to farmers but it would sure be positive to Monsanto.

So to conclude then, it has not performed. It has not done what we said, what we were told it would do for our farmers. In the only and we are the only place, the US and Canada are the only places that have commercial experience growing these crops and the US is the only one that actually collects data on whether it actually works or doesn't work. So is plant genetics in fact the problem? Is it crop genetics that is causing the problem that we're fixing with genetic modification or is it something else? And I would argue that biotechnology and, for that matter, plant breeding in general but certainly biotechnology prolongs ecologically dysfunctional systems. It deals in symptoms.

A weed is a symptom of a dysfunctional system, a system that has opened a niche and allowed weeds to grow or allowed corn borer to grow or allowed Colorado potato beetle to grow or whatever it might be. And the causal approach would be to say: What can we do to narrow that niche so we don't have such a problem rather than going out and killing the symptom because that means if you don't go back to the cause, the thing will still be there every year after that, so we need a different way of going about this. And continuing this approach ensures that you are paying money for products year after year after year 'cause you're getting at symptoms rather than at causes.

So to conclude, I provided evidence and this is the only objective evidence available, given what I just said about lobby groups and about the reliability of what they present. First generation GM crops have not fulfilled their promise. They have not increased yields. They have not reduced pesticide use; in fact, they've increased it. They have not increased farmer returns and that's part of the reason why farmers are in this perpetual farm crisis that we're in today.

Continuing to do this is not serving the needs of our farmers, our clientele; and in fact, the main reason why this technology is rising to the surface in government funding and government support in the Canadian biotechnology strategy, I would argue, is that it is proprietary; not because it works but because it is proprietary. And this is against more holistic, more management approaches, which are not proprietary. And if, in fact, crop genetics is not the problem, if you cannot pin it on the corn or the potatoes or the beans or whatever for the prevalence of Colorado potato beetle or

European corn borer or weeds or whatever, if the genetics of the crop is not limiting, then GM cannot be the solution because it's a genetic solution. We're applying a genetic solution to what is functionally a management problem.

And with that I would be happy to answer questions.

APPLAUSE

Wilbur MacDonald (PC)(Chair): Okay, anybody? I appreciate if we have no applause, if you don't mind. It's just interrupting the proceeding. First, I'm going to ask you to ask questions, short questions, short answers if we can. Fred and then Wayne.

Fred McCardle (PC): You mentioned \$700 million in public money. Where is that happening?

Dr. Ann Clark: It comes part from the feds and part from the province.

Fred McCardle (PC): In Canada.

Dr. Ann Clark: In Canada. That's just in Canada.

Fred McCardle (PC): To study or develop.

Dr. Ann Clark: Both and promote, study, develop, and promote. That's right.

Fred McCardle (PC): Well, there's none going on any in Atlantic Canada.

Dr. Ann Clark: Well, I don't know about Atlantic Canada but these crops, certainly the corn and beans is Ontario and the canola is in the west, in Saskatchewan.

Fred McCardle (PC): So they're spending \$700 million to what?

Dr. Ann Clark: To study, to develop, to promote, to buy ads in the *Globe and Mail*, to release publication. Those figures came from Mark Winston at the - Let me just think. - Canadian Institute for Environmental Law and Policy.

Fred McCardle (PC): The government is developing GMO crops.

Dr. Ann Clark: Oh yes, yes. It's doing a tremendous amount. This whole Roundup Ready wheat, the whole Roundup Ready wheat thing was a collegial relationship between Monsanto and the feds, Ag-Canada.

Fred McCardle (PC): Well, we had the federal people in here last week and they never mentioned anything about this kind of -

Dr. Ann Clark: They may not have mentioned it but for sure, for sure. We do it at Guelph.

Fred McCardle (PC): Seven hundred million dollars is a lot of money.

Dr. Ann Clark: It is a lot of money, that's right. It's my money and I want it back.

Wilbur MacDonald (PC)(Chair): Wayne.

Wayne Collins (PC): Precisely the question I had too because I was taken aback when I heard that figure of \$700 million. Do you know if in conjunction with Monsanto does the Government of Canada have some proprietary rights to this RR wheat?

Dr. Ann Clark: Well, they did. They gave it up because there was this huge outcry. This was all in the *Globe and Mail*, was it last year?

Wayne Collins (PC): No, I'm sorry. Enlighten me please.

Ron MacKinley (L) (Chair): We're just farmers down here. We don't know about the *Globe and Mail*.

Dr. Ann Clark: Yeah, they did. They did have a relationship and they essentially gave it up. I don't actually remember all the details.

Wayne Collins (PC): Do you know why they gave it up?

Dr. Ann Clark: Well, the public was outraged to think that they had done this but it's way more than actually releasing cultivars. There's just a whole bunch of stuff that we do in research that is supportive of this industry.

Wayne Collins (PC): Do you know how much

money the Government of Canada actually had invested in collaboration with Monsanto on (Indistinct) ?

Dr. Ann Clark: I don't, truthfully, I don't and a lot of what Canada did actually was conventionally breed a superior wheat variety and then Monsanto would own it after that because they would put their gene in it and then it's Monsanto's variety. So public money, public plant breeders - You could probably talk about this better than me. - have done all of that work over all of those years and produced that variety and then Monsanto owns it 'cause they put their gene in it. That's just -

Fred McCardle (PC): Is that where the \$700 million is coming from?

Dr. Ann Clark: That's just that's just one small thing. There are something like 600 person years of scientists' time at the Saskatchewan Crop Development Center, I think it's called, in association with the University of Saskatchewan all devoted to biotechnology and only some of that is industry money. A lot of that is provincial and federal money so all kinds of stuff.

Fred McCardle (PC): You mentioned where you got that figure.

Dr. Ann Clark: It was Mark Winston and I think it was Canadian Institute and Environmental Law and Policy, CIELAP was the organization he worked with at that time.

Wayne Collins (PC): We had a representative in here last week.

Dr. Ann Clark: Okay.

Ron MacKinley (L) (Chair): I had a question for you. This GMO modified wheat that they developed, what do they not have to spray for if you planted it? Say you planted it. Does it a kind of fungus that grows on it or is it the weeds or -?

Dr. Ann Clark: The only thing it was intended to do was to allow you to spray Roundup on the wheat and control weeds and if you read Monsanto's patent actually that gives them the right to do that, there's about 30 or 40 different crops. Wheat is just one of them.

Ron MacKinley (L) (Chair): Yeah, right. I could

see like barley, for instance. We grow a lot of barley wheat here. There's no problem for weeds here. We just -

Dr. Ann Clark: Well, that is exactly the question because why do you need to spray a herbicide on wheat.

Ron MacKinley (L) (Chair): No, we got to spray it on. We go in with a herbicide. We go in with sodium 300 or something like that.

Dr. Ann Clark: Okay.

Ron MacKinley (L) (Chair): But just one pass through looks after the weed problem because a lot of it you already had potatoes in there before.

Dr. Ann Clark: Yeah. Wheat as a crop just doesn't need the herbicides that corn and soybeans do or canola or cotton. They're much bigger.

Ron MacKinley (L) (Chair): They come so quick and thick.

Dr. Ann Clark: Yeah. That's exactly right.

Wilbur MacDonald (PC)(Chair): Eva.

Eva Rodgeron (PC): Now in some of the research we've gotten -

Wilbur MacDonald (PC)(Chair): Speak up, Eva, please.

Eva Rodgeron (PC): Sorry, in some of the research we have, it talks about, for example here in the province, like there's insulin being used - there's different products, so in your opinion, is it a safety factor as far as the food we might consume or is it - ?

Dr. Ann Clark: I gave, I gave your clerk a copy of a talk I gave last year in Germany and the title of my talk was "GM Crops Are Not Containable" and you have copies of it I think and it's been published now. It is impossible to contain and this does not start with GM. This is crops in general. Pollen moves. Canola pollen can move eight kilometres. Selfing crops like wheat and soybeans, it moves metres or tens of metres. It doesn't move kilometres but pollen moves and seed moves and

when you put the seed in commerce in commercial field scale stuff, you can't keep it apart. That's why if you go now to buy a sack of non-GM canola or non-GM soybeans or non-GM corn, there's a disclaimer right on the label that says: We don't guarantee that this is GM free because seed companies themselves cannot keep these things apart. It's just literally impossible to keep them apart.

So when you put pharmaceutical traits into these crops, for sure if they're grown in the field in something that flowers, there is the risk of the gene moving in the pollen and going to something else. An even greater risk is some very interesting work by Stotsky at New York State on chemicals that are exuded by the roots of the crop during its life cycle. It turns out that BT corn, for example, exudes the active toxin from its roots all the way through its life cycle so all the time it's growing, it's squeezing this stuff out into the soil and it persists in the soil and it stays active. It's insecticidal in the soil.

So if you're growing a pharmaceutical crop and you've got some vaccine for pig diarrhea or you've got insulin or you've got, who knows what, his question is: We need to be studying this stuff rigorously because what is it putting out into the soil either during its life cycle or after you incorporate the residue? So there are a number of risks that we need to be acknowledging which would never be detected in the current Health Canada or CFIA testing protocols about pharmaceutical crops but really about all of these crops.

And that's really my main argument. I don't argue against GM crops per se. I think they have been released prematurely without adequate study of potential risks.

Eva Rodgerson (PC): Thank you.

Wilbur MacDonald (PC)(Chair): Wilfred.

Wilfred Arsenault (PC): Thank you Mr. Chair. Dr. Clark, you had an excellent presentation. The points you made were very clear, easy to understand. It was easy to follow your presentation.

Dr. Ann Clark: That's 'cause I don't - That's 'cause I'm not a genetic engineer.

Wilfred Arsenault (PC): Well, your qualities as a teacher certainly came forward. Just a quick question. You talked about research indicating that yields have not increased with the process and you also mentioned that there's no marked improvement in pesticide reduction.

Dr. Ann Clark: With the exception of BT cotton and only in some states.

Wilfred Arsenault (PC): My question is: Are you referring to corn and soybean only or are you talking in general?

Dr. Ann Clark: In general. These numbers that I've given you, unless I specifically said one crop or another, it's generic. The BT cotton is a particularly interesting example because in Arizona, in particular, the amount of pesticide that was used on cotton declined by 90 per cent, 90 per cent reduction in pesticide use on BT cotton but the problem is coincident with the release of BT cotton, the growing of BT cotton, the farmers in that area had already banded together and come up with a different protocol which was done at the same time as the BT was used and it's the same thing that applies to corn at least in European corn borer.

Interestingly, they decided that the way that they would approach this and it was done through their commodity organization and it was mandatory, every single farmer had to do this, they had to incorporate their residue into the soil by a certain date every year and it varied latitudinally up the state of Arizona. And the reason for that is that their target, which is the budworm bollworm complex, over-winters in residue so the notion was you incorporate it into the soil. You've reduced the habitat for the bug and you reduce the problem in the next year. That was all done at the same time that BT was released and between the two, their need for insecticide dropped by 90 per cent.

That's really impressive but the same BT cotton concept had no affect, in fact it increased pesticide use in Georgia and Alabama and places where they didn't do this incorporation thing. So it's not clear to me that we should attribute it to BT cotton but it's fair to say that when you release BT cotton in Arizona, dramatic, dramatic reduction but not elsewhere.

Wilbur MacDonald (PC)(Chair): One more

question, Ron, the last question.

Ron MacKinley (L) (Chair): Now we know, I know from potato farmers if you use Sincor continuously and I mean by continuous every three years, every four years, that you get resistance to weeds where you're supposed to rotate your herbicides.

Dr. Ann Clark: Your herbicides, sure.

Ron MacKinley (L) (Chair): So if the question I'd ask you, if you grew soybean ready here one year out of say four, would that stop the resistance? I can see where if you're growing soybean, soybean, soybean, you're going to get resistance to weeds 'cause it happens. Might take 15 or 20 years but it happens, but if you rotated that crop of soybeans every three or four years, would that not cure your problem?

Dr. Ann Clark: I think if you rotate, if you rotate any herbicides, forget the GM, just any herbicides, you prevent or you greatly reduce or delay resistance. I think that's a fair point. The problem is two-thirds of all the land that's sown to GM crops is Roundup Ready so Roundup Ready is in everything and this company is releasing Roundup Ready alfalfa. They're trying to release Roundup Ready wheat. It will be Roundup Ready rutabagas and Roundup Ready every crop. They're just going through this list of crops that they've got the patent on and they're just adding Roundup to each one and that's pretty much all that's coming in the pipeline. We've got all these promises of all these wonderful things that it's going to do but all that really works and they know how to make it work is Roundup Ready.

Ron MacKinley (L) (Chair): So what you're saying is they could take Roundup Ready soybeans, put in Roundup Ready wheat and then put in Roundup Ready alfalfa and you're right back to the same thing.

Dr. Ann Clark: That's right. And the other big problem is that for conservation tillage at zero tillage or eco-fallow, as it's called, so much of that they use glyphosate. They use Roundup as the burndown so regardless of the GM stuff, you're spraying Roundup all the time in the west for conservation tillage. Forget about GM crops. This is just a burndown before you plant your crop so between all those things, you're using it all the time.

Ron MacKinley (L) (Chair): Yeah. Some farmers here and we grow potatoes and we grow barley but some farmers here are going in the spring of the year and they're going in with Roundup and then they plow after (Indistinct) .

Dr. Ann Clark: That's what I mean so the more times you're doing that, the more screening you're imposing for these.

Ron MacKinley (L) (Chair): There wouldn't be too many but that's a way to clean that saves the soil. Now we don't do it. We do it the old-fashioned way with plowing.

Dr. Ann Clark: That's exactly the argument that was used. This is going to conserve the soil but the experience is it actually challenges that because if you've got Roundup Ready canola volunteers coming up and you've got Roundup Ready wheat volunteers coming up in your field the next year and you've got all those Roundup resistant weeds that are there, you can't use Roundup anymore and every other competing alternative is so expensive, so much more expensive that the temptation is to go back to metal, go back to working the land. It detracts from conservation tillage. It doesn't enhance it so that's the risk. That's the concern.

Ron MacKinley (L) (Chair): In other words, there's no quick fix.

Dr. Ann Clark: Honest to God, there's no quick fix.

Wilbur MacDonald (PC)(Chair): I want to call it there. I have to at some point. I want to thank you very much for coming, Dr. Clark. We certainly appreciate it.

APPLAUSE

Wilbur MacDonald (PC) (Chair): Can you and do you have to unhook your machinery there?

Dr. Ann Clark: I do but I'll do it quietly.

Part II - Denise Dewar, CropLife Canada

Wilbur MacDonald (PC)(Chair): I do believe that Denise Dewar is here. Would you like to come forward, dear? She's CropLife Canada.

Ron MacKinley (L) (Chair): Mr. Chairman, you shouldn't be using the word, "dear".

Wilbur MacDonald (PC)(Chair): Did I use that, okay, sorry. You can sit in the center. You have a presentation too.

Marian Johnston (Committee Clerk): Maybe we could just have a five minute recess.

Wilbur MacDonald (PC)(Chair): Okay. We'll take five minutes until you're ready.

RECESS - RECONVENED

Wilbur MacDonald (PC)(Chair): Okay, Denise, we'd ask you to introduce yourself, a little bit of your background and then you go ahead and present your presentation and I would ask the members to wait until you're done. Sometimes they don't and then we'll proceed.

Denise Dewar: Okay, no problem.

Wilbur MacDonald (PC)(Chair): Go ahead, dear.

Denise Dewar: Good afternoon everyone. It's a real treat to be here again in Prince Edward Island. Poor old Air Canada though. A two hour direct flight from Toronto turned into a six hour flight with a stop in Montreal so there you go. Anyways, it's good to be here again and I appreciate very much the opportunity to come and speak to the committee.

My name is Denise Dewar. I am Executive Director of Plant Biotechnology for CropLife Canada, which is the industry association which represents the developers of the technology. So just a quick outline of my presentation. I'll go through who we are at CropLife Canada, the safety and stewardship around GM crops, global trends and opportunities for Prince Edward Island as well as Canada.

CropLife Canada - we are formally the Crop Protection Institute. We're the industry association represents the developers of plant science innovations for agriculture, essentially crop protection and plant biotechnology products. And you can see the logos for some of my member companies up here on the wall - Pioneer, Dahl, Bayer, DuPont, BSF, Syngenta, all names that you folks will be familiar with if you know the agriculture

business. We're an industry founded on safety, very heavily regulated products and also on innovation in terms of bringing new products to the agricultural market place.

I'll talk a little bit about the safety and the stewardship of the products. This is the pathway of approval for one of these new GM crops in Canada. Essentially, when the companies find a trait of interest, like if it's insect tolerance or herbicide tolerance, they start up in the lab at the innovation and discovery phase up here. When they find something of interest that they're ready to move on and look at in field trials, then they're regulated under confined field trial testing by the Canadian Food Inspection Agency and I believe you had Steven Yarrow come and speak to you a few weeks back about their job at CFIA with respect to that. And then when they're ready to make a submission into the regulatory authorities, they actually make three submissions: one for food safety assessment which goes into Health Canada, one for environmental safety assessment which goes to the CFIA, and another for livestock feed safety which goes to the CFIA.

That whole process from the time of innovation 'til we get to the point of going into variety registration takes probably about 10 years and upwards of \$150 million Canadian to do the research, to prepare the regulatory submissions, so it requires a fair bit of funding to bring one of these products to the market place because there is such high demands from the regulatory system to demonstrate that these products are safe. Once they are given approval, you go into variety registrations looking at correct seed varieties for your different locations and ultimately into commercialization.

So as I mentioned, Health Canada regulates the safety of all novel foods in Canada. Their legislative power, *The Food and Drugs Act*, and the Canadian Food Inspection Agency, CFIA, they regulate importation, environmental release, livestock feed safety, and they have a series of acts. The Seeds Act, the Feeds Act, Fertilizer Act and so on that they use to use that regulatory ability.

So over and above what the government requires, as an industry we have a very strong stewardship initiative around plant biotechnology products but also our traditional chemistry products and we

believe that as an industry, we have a responsibility to properly manage our products as well, not only what the government regulates but what do we do to responsibly manage our products. And so we have a stewardship first program, which is our contribution to sustainable agricultural practices. We want to maximize the benefits of these products and minimize their risk. It's a long-term vision. It's not something - Stewardship has to have a long-term vision. You have to look at the full product life cycle in order to implement a stewardship program and it's a proactive, industry-led initiative.

So this is our stewardship circle for plant biotechnology and we have a similar circle for pesticide products as well and it really takes it from up in the research and development phase here. And we offer a training program for anybody that does research with GM crops to make sure they understand CFIA's regulatory requirements because we don't want escapes before these products are approved. So we offer training to anyone in the private or the public sector who does research with GMO crops.

Obviously, we have our regulatory approvals moving into other countries as well as Canada. We have a series of developer commitments around marketing and commercialization of the products. Depending on what the trade is, you may require distribution channel training and handling depending again on what the particular trait is, grower certification, channeling of the crop if we're exporting to Europe.

For instance, corn in Ontario, we do export some corn to Europe so we have to channel the GM corn to make sure it doesn't get into the European supply and then if there are any requirements around disposal of the seed and this is very much a circle that continues to evolve.

As the traits continue to come forward, it's a living document and will adapt as the traits come forward and just to give you a picture of how committed we are to the stewardship of our products, we are a lobby organization. I'm not going to kid you about that. We do that for a living but really as an association where we spend our money, two-thirds of our members' dollars go to stewardship. That is our core business at CropLife is running these stewardship programs but we do communications. Eight percent of our budget - government affairs;

seven percent and so on, so we really do walk the talk in terms of proper stewardship of our products.

Moving on to take a look at some global trends and the lights - Unfortunately, we can't see the colour on that very well but every year essentially for the last nine years, biotech plantings have been increasing double digit numbers across the world and this red line here represents increased plantings from 1995 through to 2004. Red line represents increased plantings in the developing world so developing regions of the world. The yellow line represents industrialized countries and the green represents the total.

So in 2004 we went up 20 per cent globally in terms of acreage of biotech crops; 15 per cent was the number in 2003. So in 2004, we had a total of 200 million acres of biotech crops as compared to 1996 when the crops first reached real commercial scale at 4.25 million acres. And again, really noticing that the uptake in the developing countries is taking off. Thirty-four percent of the growth this past year was in developing countries like China, Brazil, Indonesia, South America, India. All these countries are developing the technology very rapidly.

And this graph just gives another breakdown of which countries are growing which crops. Spain, there is a little bit of BT corn grown in Spain. Germany, again, has some BT corn as well; Romania - soybean, India - cotton, China - cotton, Philippines - maize, Australia - cotton, Brazil - soybean, South Africa - maize, soybean, and cotton; Paraguay, Uruguay, Argentina - number two producer of biotech crops in the world; Canada number three with 5.4 million hectares last year and the USA, of course, at number one with 47.6 million hectares of soybean, corn, cotton, and canola.

And the reason I put this graph in here was to really demonstrate the increase in the developing regions and their uptake of biotechnology. The green part of the bars here represents growth in the industrial nations. The red part represents the developing world and there's five principal countries: China, India, Argentina, Brazil, South Africa, and we're now to the point where 90 per cent of the farmers growing GM crops are actually in resource poor countries. They have small parcels of land; therefore, a greater number of farmers farming fewer acres. So actually, 90 per

cent of the farmers now growing GM crops are actually in resource poor countries.

What does this mean for Canada? The European Union is now approving biotech crops. We know that that's happening. The moratorium has been lifted but the increase uptake of GM crops in developing world means more potential markets for Canadian exports as these countries get their regulatory systems in place and they start to approve these products. And as I mentioned, three of the top or I didn't mention this but three of the top five growers of GM crops are in the developing world, particularly in key locations like China and China is expected to commercialize GM rice this coming season.

Back to Canada, to date we've approved more than 50 novel foods in Canada. Essentially, a lot of them on the herbicide tolerance and insect resistance area in crops like canola, corn, soybean; however, we're starting to move into these quality traits so modifying the oil profiles of soybean and canola now. These are the output traits where we're moving to now. More complex traits require longer to develop the regulatory packages, more complex regulatory approval so these types of traits do take longer to come to the market place but they are starting to come now. We've got low trans fat varieties coming forward to the market place in both canola and soybean.

A graph just to show you what the uptake of biotech crops has been in Canada and the US - corn, cotton and soybean. Corn is the blue line from 1995 to 2003 up to about 40 per cent if you average the two countries; soybean, the green line, up to 80 per cent of the soybeans in Canada and the US are from GM varieties and cotton in the US, up to about 74 per cent. Canola follows a very similar line in Canada. Up to 77 per cent of the canola acres this past year were GM varieties. There's the Canadian numbers from 2003 actually, these numbers. Sixty-eight percent of the canola was GM; corn - 50 per cent, and soybean - 48 per cent.

Looking at Canada alone, as I mentioned, red line canola, I wasn't smart enough to be able to extend my graph out to 2004 so I just put the numbers down at the bottom here but 77 per cent of the canola, 55 per cent of the corn, 50 per cent of soybean were from GM varieties last year. So very rapid uptake of the technology, I think quite indicative that farmers are very innovative and very

quick adopters of technology. The only other, the most rapidly uptake in technology in history for Canadian farmers was hybrid corn when that came on back in the 1930s. So biotech only runs a close second to hybrid corn in terms of rapid adoption by Canadian farmers.

I'll talk a little bit about the opportunities with biotechnology. There's essentially, I like to talk about it in terms of the bio-economy because that is the phase of the economy. We're moving out of the industrial economy. We're moving into the bio-economy. The Government of Canada talks about the bio-economy and plants can really be an important driver for the new bio-economy. We can use plants, of course, to develop new agronomic traits and that's where we are today. Improving the efficiency of agricultural production is the main objective here so insect resistance, drought tolerance, disease resistance and, in fact, Syngenta crop protection, who is one of my member companies, they just released - they've mapped the genome for late blight. They've just released that publicly and made it available essentially to anyone that wants that information.

So through genetic techniques, they've been able to sequence the genome of the disease, late blight, and so that will very much help to find a good crop protection method, whether it's through bio-technology or other methods now that we know the sequence for the genome for the disease.

Food processing traits - we have things like prevention of potato browning which is, of course, very important to the potato processing industry here in Prince Edward Island. Heather Topley, who is a PhD candidate at Truro in Nova Scotia, was working on this project of potato browning. Nutrition and functional foods, potatoes that can absorb less oil when they're cooking. Industrial traits creating energy from bio-mass or bio-plastics, car fuel, energy can all be made from agricultural feed stocks and I think you folks are familiar with the applications like bio-diesel and so on; and finally, pharmaceutical traits using plants to produce vaccines or proteins that can be used to treat or prevent human disease. And again, there's a lady working at Laval, Meriem Benchabane, who is working with potatoes to produce proteins to help prevent disease so potentially, having potatoes as a factory for producing these proteins to help treat disease.

And this is a graph from one of my member companies just to give you a feel for where their research and development is going and what kind of products they're working on. The blue squares here today, this is where we are today so products that are sold to the farmer - BT corn, herbicide tolerant canola, herbicide tolerant soybean, input traits based in the seed meant for improving agricultural efficiency, moving out to professional products, moving out to the customer base being the consumer. We can have home and garden products, produce cereals with reduced mycotoxins, so fusarium resistant wheat is what we're thinking of here, healthier produce, improved health and dietary components, animal feed, bio-fuels, higher value crops.

So this green area here are the new markets and the new customers that these companies are targeting through plant biotechnology. That's where all the research R and D is going on at this point in time. Another graph showing essentially the same thing, a different company. Dollar value is expressed here in Euros so you can tell it's a European based company. Nineteen ninety-five, this is what our industry looked like essentially - crop protection business, herbicides, insecticides, fungicides. Now where we are today crop protection is still core part of the business of these companies but plant breeding and plant biotechnology now part of that portfolio although still a minor part of that portfolio.

Where they envision the future going? Just exactly what I was talking about and they see this by the year 2015 so that's not too far into the future that we're going to be seeing these products come to the market place but we're talking about pharmaceutical applications, food applications, fibers, biodegradable plastics, industrial products, modified oils, as well as the traditional business of crop protection and plant biotechnology. So really seeing the value of the industry and the potential value to farmers is going on a scale like that.

And so knowing that you folks are interested and can Prince Edward Island have these opportunities as well as maintain the opportunity around organic agriculture and other forms of production, I thought it was worthwhile to touch base on co-existence and what do we mean when we say co-existence? It's really the economic consequences of adventitious presence of material from one crop and another but allowing that farmers should be

able to freely cultivate any crop that they choose. So if you're able to co-exist, you expect that you will have adventitious presence of one type of crop in another so you will have conventional in your organic. You will have organic in your conventional. You will have biotech in your organic.

That's the nature of the biology and so you have to allow for that when you talk about co-existence and it's really - It's not about product or crop safety. It's about production and marketing of crops that are approved for use so biotech crops are approved by Health Canada and CFIA, as are organic crops, as are conventional crops and we can all co-exist because they are safe and they're approved. So what we need to do is make sure we have thresholds in place so that everybody can have a market place in which to sell.

Co-existences, it's not a new concept. I know we have some seed producers here in the gallery today. Seed production occurs along with commercial grain production. Farmers have been doing this for quite a long time. Organic versus conventional, same thing - it's been going on for quite some time. It's based on crop segregation and using specified production protocols to access the market premium.

None of these systems today or in the future will guarantee 100 per cent purity. It's just not achievable in any biological system and so that requires that we have to rely on labeling thresholds or percent purity. So for instance, the National Organic standard in Canada guarantees 95 per cent purity. They allow a 5 per cent threshold for non-organic ingredients, which also includes GM crops, so they do allow for 5 per cent GM crops as well as 5 per cent residue of chemical pesticides so they do allow for that. The GM labeling standard in Canada, same thing - a 5 per cent threshold for a non-GM content so it is possible to produce, you know, both your GM and your non-GM crops and meet the market demands.

So co-existence on the farm today, it really speaks to separation of space. You need isolation distances between the two different types of production systems, separation of time, communicating with your neighbour and, of course, good farming practices. These are the principles that worked in the past and they still apply today.

And just the last point here that the North American acreage on both organic crops and biotech crops over the last 10 years have been increasing exponentially so both biotech has been rising as has organic and we've been co-existing together just fine and everybody's been accessing their markets. So I think, you know, this question here: Can PEI have it all? I think the answer is absolutely, PEI can have it all. You can have the opportunities that we're talking about with the bio-economy, plant based pharmaceuticals, industrial traits, all those high value crops and have your organic market at the same time.

These numbers I pulled from Agriculture Canada. In 2003, there were 1915 acres of certified organic product here in Prince Edward Island. Total value premium that came out of that market - approximately \$590,000. In, I pulled these numbers now from your researcher, Louise Polland. So 14,000 acres of soybeans in 2003; 8,400 of those were GM soybeans here in Prince Edward Island so 60 per cent of the soybeans GM and 40 per cent non-GM. No premium paid for those going into the conventional stream. So no premium for non-GM, no premium for GM.

Three thousand acres of corn - about half of that was GM and about half of that was non-GM. Eight hundred and fifty acres of canola seed - The Island makes a good place for producing canola seed. Two hundred acres of that was GM - about 25 per cent of the market place represented a value of \$1.2 million premium paid so that's where I would draw your attention: \$1.2 million versus \$590,000. There's potential for the certified organic market to grow - absolutely. No one's denying that but there's potential for the biotech market to grow too in a huge way. We can co-exist. It's all about thresholds.

So just some fast facts on biotech production and what it's meant for Canada. The value of GMO crops in Canada today - \$2 billion and that's with input traits for the farmer. The benefits to the farmers over the last 10 years with biotechnology - higher yields, cleaner crops, reduced production costs, more pest management options, economic gain. Canola Council study showed a net back to the farmer of \$15 per hectare. No wonder. Seventy-seven percent of the biotech acres in Canada are GM varieties because farmers are saving money and that's why it's continued to increase very rapidly.

Contribution to sustainable agricultural practices - herbicide tolerant crops reduce tillage, conservation tillage, decrease in fuel consumption. In the year 2000, the Canola Council surveyed their members. They found that they saved 31.2 million litres in the year 2000 of fuel from fewer trips back and forth across the field with the technology, herbicide tolerant technology. That also contributed to greenhouse gas improvements, a reduction in one point billion pounds of CO₂ less per year. So not only is this technology good for the farmer's wallet, it's also good for the environment. It also meant less soil erosion.

So report card 10 years later GM crops - 2005 is the tenth year anniversary of biotech in Canada. We first launched canola in the west in 1995. We were the first country in the world to produce GM crops. We're a global leader. During that 10 year period, biotech and organic crop acreages have risen exponentially. There's been co-existence happening for the last 10 years and everyone has found a market place for their crops. Globally, double digit growth has been happening every year around the world. And as I mentioned, developing country adoption of biotech crop now outpaces the developed regions; clearly, a track record of success with the technology.

So just to wrap up with some strategic consideration, the Government of Canada's bio-strategy website and here I've put the website in - biostrategy.gc.ca. I've just lifted a quote from there. Through investments in biotech, the Government of Canada can help ensure Canadians reap the benefits of these innovations and their associated economic spinoffs but the net gain for Canada goes beyond mere dollar and cents. For instance, advances in biotechnology are spanning new diagnostic tools to help our regulatory system ensure a safe food supply so we can use biotechnology tools for more than just crop applications. A further benefit is keeping Canada on the vanguard of science attracting talent, creating, and retaining high-tech jobs.

So the Government of Canada is also very heavily invested in the technology and sees biotechnology as a leader in driving the bio-economy for Canada. Canada has a world class regulatory system for assessing the safety of these crops. We are recognized around the world for having the best system out there. We continue to be a global leader in plant biotechnology. In 2004 we were the

number three country planting bio-tech crops and around the world, developing countries are commercializing. Brazil, for instance, is conducting trials with virus resistant potatoes and Mexico is looking at drought tolerant wheat.

From the standpoint of the innovations that I talked about, the output traits with industrials and pharmaceuticals, these are going to be niche market crops; small acres - high value. This will fit very nicely with Prince Edward Island agriculture. You have a small contained environment. It's a natural fit for biotech crops and it will be far more lucrative than conventional agriculture and organic agriculture.

So in summary, I just want to say that we have appreciated being here today and look forward to providing any more information than we can and certainly open to any and all of your questions.

Wilbur MacDonald (PC)(Chair): Okay. Anybody have questions? Ron.

Ron MacKinley (L): I'll start with - could you go back to where you had the acres that were grown on PEI? So you're saying there was 915 acres of certified organic which grossed \$590,000 at the farm gate.

Denise Dewar: Those are the numbers that, yes, those are the numbers that Agriculture Canada have.

Ron MacKinley (L): That seems low to me.

Denise Dewar: It could be, yeah.

Mr. MacKinley (L): I don't know, like and there's 14,000 acres of soybeans.

Denise Dewar: Mmhm.

Mr. MacKinley (L): Oh, that's 8400 acres of soy.

Denise Dewar: Of GM soy, so about 60 per cent.

Mr. MacKinley (L): And then alright, the corn, there's not many acres of corn grown.

Denise Dewar: No, no, very small.

Mr. MacKinley (L): And not many canola -

Denise Dewar: No.

Mr. MacKinley (L): - canola seed grown. The previous speaker said there was no proof that farmers made more money like. You were here. No, you mightn't have been but anyway, she alluded to, Ann Clark alluded to the fact that there was nothing out there to show that there was any difference between using GMO ready products, I guess, compared to the conventional but yet your chart shows there's quite a bit of difference.

Denise Dewar: I think farmers are voting with their seeders. You know, I think there has to be. Farmers are pretty sharp with their pencils last time I checked and if they're making a profit, they're going to continue to plant that crop. And the fact that they continually increase the plantings of these crops every year is evidence to me that they are getting some benefit.

Mr. MacKinley (L): So could you go back to that slide you had with the farmers.

Denise Dewar: Is that the one?

Mr. MacKinley (L): No. You had one there with the farmers 31 million litres of diesel fuel they saved.

Denise Dewar: Okay. That was, yeah, hold on.

Mr. MacKinley (L): Alright. The value of GMO Canada today two billion benefitted farmers over 10 years, higher yields, cleaner crops, reduced production costs, more pest management options. Fifteen, net income gain canola study \$15 a hectare.

Denise Dewar: That's right. The Canola Council of Canada surveyed their members. Why have you taken up this technology so rapidly?

Mr. MacKinley (L): Now who did the survey?

Denise Dewar: The Canola Council of Canada, producer group.

Mr. MacKinley (L): Producer group, alright, so that's where that came from.

Denise Dewar: Mmhm.

Mr. MacKinley (L): And where did the reduced tillage, et cetera come from, fuel consumption, same group?

Denise Dewar: Same group, yes.

Mr. MacKinley (L): Now was that only done on canola?

Denise Dewar: It is, but there are also studies done on soybeans and corn. There's been quite a few studies done in North America actually.

Mr. MacKinley (L): Could you send us a copy of those studies?

Denise Dewar: Absolutely, I can do that.

Mr. MacKinley (L): Of corn and soybeans. Soybean Ready seems to be the big one in PEI.

Denise Dewar: Yeah. And actually, I would point out too, that in Ontario soybean growers are growing the same as here in PEI. They're growing GM and non-GM and there is a specialized market that is paying a premium in Japan for non-GM soy and Ontario soybean growers are growing both GM and non-GM and they're accessing a premium so you can do both.

Mr. MacKinley (L): Now here's another question for you. From the organic growers' side of things, talking to them, they're scared that say, you're growing soybean Ready in the field and they're growing organic in the field. PEI, the fields aren't that far apart like, let's face it, so they're scared that that crop could blow into or some way go in to their organic field.

Denise Dewar: That's exactly why you have to have labeling thresholds and I talked about that, right here down bottom two lines. You will expect cross-pollination. We know pollen from organic crops flows into conventional crops. Pollen from conventional crops and GM crops flows into organic crops. We know that and there's no safety concern there because all of these crops have been approved for food and environmental safety so that's not the issue. The issue is the market, right.

Mr. MacKinley (L): Yes. If you're an organic grower, a certified organic grower.

Denise Dewar: That's right.

Mr. MacKinley (L): Chemical free whatever bread or -

Denise Dewar: It's not chemical free though. That's the misnomer. They are allowed up to 5 per cent non-organic so if there is drift of a pesticide or if there is drift of a GM crop into these certified organic, they have a window there that allows that. It's a 95, the Canadian organic standard allows for 5 per cent threshold.

Mr. MacKinley (L): So let's say you're an organic potato grower and you're growing potatoes and Agriculture Canada did a study, Agriculture Canada did a study that I think is was Bravo or something was in the air to a higher concentration than normal is but not a health concern. Would that and you're two fields over from that area where it was tested so I would assume that would go in the air would go into your?

Denise Dewar: That's right. There's potential for drift. Absolutely. From one to the other whether it's pollen drift or whether it's spray drift and that's why, you know, the organic farmers to their credit when they set up this standard they recognize that they could not guarantee 100 per cent purity and so they've built in allowances. But what they will guarantee is 95 per cent purity. But they have to allow for some of this adventitious occurrence of what exactly what you described.

Ron MacKinley (L): So if you're an organic grower, your sowing your organic potatoes for instance. You could have up to 5 per cent contamination.

Denise Dewar: You could have. You could have.

Ron MacKinley (L): How can you tell - would you test it if it's 10 per cent?

Denise Dewar: Well actually organic farmers are not required to do testing. What they are required to do is follow protocols. Certain protocols that they have to follow and then they are audited based on those protocols.

Ron MacKinley (L): All right.

Denise Dewar: So to my knowledge the end use product is not tested. Although I believe that could be an option if it was so desired.

Ron MacKinley (L): Do they have to bring that in to their own . . .

Denise Dewar: That's right.

Ron MacKinley (L): . . . group and they could purify it better. Alright. I just wondered.

Wilbur MacDonald (PC) (Chair): Richard.

Richard Brown (L): Just one quick question. I guess on acreage on PEI.

Denise Dewar: Yes.

Richard Brown (L): You said organic farmers is a \$590,000 premium. That's over and above what they would make . . .

Denise Dewar: That's total value.

Richard Brown (L): . . . normally.

Denise Dewar: Total value.

Richard Brown (L): Okay total. And you are saying then for 200 acres of canola, GM canola, \$1.2 million.

Denise Dewar: That's right.

Richard Brown (L): That's what 200 acres is worth.

Denise Dewar: That's right. High value seed.

Richard Brown (L): Oh you're saying seed.

Denise Dewar: Yes. The seed.

Richard Brown (L): Does your organization . . .

Ron MacKinley : Farmers don't get it.

Richard Brown (L): Farmers don't get it.

Ron MacKinley (L): Farmers don't get it.

Denise Dewar: Farmers get part of it.

Richard Brown (L): \$600,000.

Denise Dewar: They definitely get paid a premium to grow this certified seed.

Ron MacKinley (L): (Indistinct) \$60,000.

Richard Brown (L): \$60,000 an acre. That's what they are getting.

Denise Dewar: I'm not sure what the premium is paid. I know some of the seed growers are here. But there's definitely a premium paid. Otherwise the farmer won't bother growing it.

Richard Brown (L): I guess just one . . .

Denise Dewar: Same as organic, there's a premium.

Ron MacKinley (L): Yes, 200 acre of GM canola seed.

Richard Brown (L): 1.2 million.

Andy Mooney (PC): 1.2 million.

Ron MacKinley (L): 1.2 million. That's for somebody growing -

Denise Dewar: That's the value of the seed.

Ron MacKinley (L): That's to plant it.

Denise Dewar: No. That's the value of the seed . . .

Richard Brown (L): No that's just to put in Ron.

Denise Dewar: . . .when it's being sold.

Ron MacKinley (L): So you're growing it for seed.

Denise Dewar: Yes. It's being grown for seed which is then g sold out west.

Ron MacKinley (L): You should be growing that Fred.

Fred McCardle (PC): (Indistinct) The company is making the other 5,000.

Ron MacKinley (L): Fred is a seed grower.

Richard Brown (L): Just one quick question.

Denise Dewar: Okay there you go.

Ron MacKinley (L): No, he is a seed grower -

Wilbur MacDonald (PC) (Chair): Richard is asking a question.

Richard Brown (L): So does your organization support labeling of GM products on the store shelves?

Denise Dewar: We support the Government of Canada's current position, which is mandatory labeling when there are health or safety concerns found. So if a GM product has health or safety concerns, it must be labeled. Otherwise for non safety concerns we support a voluntary labeling system.

Richard Brown (L): Thank you.

Wilbur MacDonald (PC) (Chair): Anybody else have any questions? Wayne.

Wayne Collins (PC): We heard earlier about the federal government working with Monsanto, one of your member companies, in the development of Round Up Ready wheat. I guess the federal government has now opted out that now after having spent - do you know how much money?

Denise Dewar: I don't know how much money, but I know Round Up Ready wheat is no longer in the regulatory system and is no longer going to be commercially produced. I did hear Dr. Clark speaking to that. Round Up Ready wheat is no longer in existence. So it's not an issue any longer.

Wayne Collins (PC): But there was a collaboration right, between Monsanto and government.

Denise Dewar: I can't guarantee that. You'd have to talk to Agriculture Canada. But certainly Agriculture Canada does do research in biotechnology and they may have been participating in research with glyphosate wheat.

Wayne Collins (PC): Do you know if any arms of the federal government today are involved in concert with any of your member companies in

the development of any GM products?

Denise Dewar: I don't know for sure, but I'm sure there is work going on. I can't tell you who or what.

Wayne Collins (PC): Well I'm wondering are they working somewhere in collaboration do you know?

Denise Dewar: Probably. More than likely.

Wayne Collins (PC): So how can the average citizen then trust their government when their government is actually involved in a commercial enterprise.

Denise Dewar: Sure.

Wayne Collins (PC): And then they turn around and say it's safe or it's fine or it's good for farmers.

Denise Dewar: Part of Canada - the Government of Canada has a dual role. We have a dual - the government - and again I'm speaking on behalf of the government and I am not the government.

Government of Canada has to regulate safety of products. That's a role for sure. Government of Canada also has a responsibility to ensure as Canadians we stay on the leading edge of technology and we continue to innovate with our competitors south of the border, that we continue to have access to the same technology as farmers in the US; that we can be competitive in international marketplace. So if you look at, for instance, Agriculture Canada's Ag policy framework of which Prince Edward Island has signed onto there are five pillars - business renewal, risk management, environment safety pillar, environment safety, food safety and innovation.

So Agriculture Canada has a role to play in terms of environmental safety on the farm, food safety on the farm but also to make sure that Canadian farmers have innovative and new products to grow on their farm.

Wayne Collins (PC): But if the government has a stake in the success and development and commercialization of a GM product do you think it's a - apparent obviously it's a conflict of interest if government is then going to turn around and test

and then pronounce on that product for the safety of Canadians?

Denise Dewar: The role that Agriculture Canada plays in terms of doing research is seeing how these new technologies will fit in with the current production practices. It's not to commercialize technology. That's, I mean getting regulatory approvals and paying for those regulatory submissions is not the role of the government. That's the role of the company whose going to make profit from it.

Wayne Collins (PC): You mentioned earlier government was involved with Monsanto, right?

Denise Dewar: Their involved . . .

Wayne Collins (PC): For the development of the product.

Denise Dewar: - with all companies - small, medium and large. They're involved with doing research that will be of benefit to Canada and to agriculture.

Wayne Collins (PC): And we'll leave it at that.

Ron MacKinley (L): See Wayne your government lost something like \$2 million on Monsanto growing potatoes and they shipped them over to Ukraine and it all blew up in your face.

Wilbur MacDonald (PC) (Chair): Okay. Thank you Ron for that information. Okay thank you very much, Denise and I hope you have a quicker trip back.

Denise Dewar: Yes, more direct flight back.

Wilbur MacDonald (PC) (Chair): Thank you very much.

Denise Dewar: Thank you.

Part III - Renata Brillinger: Californians for GE-Free Agriculture

Wilbur MacDonald (PC) (Chair): The next presenter is Renata Brillinger. There she is. You also have - no power points. And you can set at the centre if you like. Do you need some help, Denise, to unhook there. You're all set. See I don't

know anything about these modern technologies.

Renata Brillinger: Would you like me to start -

Wilbur MacDonald (PC) (Chair): Just a second there now. We're all set, okay. We'll pass your information around and then you can start. Perhaps in the meantime you can introduce yourself as to your background and so on.

Renata Brillinger: Great thank you. Thank you for holding these hearings and for inviting so much input. I'm glad to be here. I'm actually . . . I grew up, I was born and raised in Ontario. Spent the first 25 years of my life there and have been in California since. So it's really an honour to be back speaking on the subject of my work.

Just to introduce what I do and then I'd like just to comment briefly on the previous presentations. I represent Californians for GE-Free Agriculture which is a coalition of organizations comprised primarily by sustainable agriculture advocates and advocates of family farming and also we have a couple of members that are more focused on the organic sector, on food safety and on the environment.

It is our shared work together as a coalition to advocate for ecologically responsible and economically viable agriculture. That's what our work is and we see genetic engineering as a threat to that so we are also supporting farmers and communities in their attempt to respond to those threats.

I don't know if it was deliberate but it was interesting to see the line up already today. Beginning with a sort of retrospective analyses of where things are at with the technology, the information that we've gathered in the past nine years of using it. And then hearing sort of a futuristic set of hopeful promises that were alluded in the first presentation which is how I would sort of characterized the second presentation.

I think one of the challenges that everyone is faced with and certainly it is in front of you and your constituents on this issue is which experts to trust. And that's a challenge that's really I hear echoing back at me consistently from people- around, mostly in California, but also across the country and the United States and around the world. We're getting a lot of competing information that is hard

to sort out. Where the unbiased centre is, where the objective truth is.

I certainly don't have time to respond to some of the previous presentations, but I would just urge you and encourage you to carefully look not only at where the information is coming from obviously, whose giving it to you. But also who's paying for the research that information is based on and so as you're tracing back in your some of the followup to some of these presentations please do check on some of the facts.

Ron MacKinley (L): Mr. Chairman. I think if she came all the way from California we could spend an extra five minutes if you want to respond to some of those others.

Renata Brillinger: I'll weave some of them throughout.

Ron MacKinley (L): All right.

Renata Brillinger : Thank you for that.

Ron MacKinley (L): Especially if you've come that far.

Renata Brillinger: Right. So what I would like to do is sort of start - mostly I want to tell you about California and the experience we're having there. But I want also I need to sort contextualize it a little bit with a little bit of background about the United States at large and about California specifically.

The first presenter, Dr. Clark, did a good job I think of sort of giving you a sense of where the technology is at currently so I'll skip some of my comments there. One of the points that weren't brought up that I did want to just underscore is that in addition to the limited number of traits that are being genetically engineered, limited number of countries in which they are being grown and the limited number of crops that are being developed so far that are commercially available. It is also a fact that Monsanto Corporation owns approximately 91 per cent of the commercial market of genetic engineered crops currently. So we're also talking about only one, primarily one company that's both promoting and benefitting from, financially from, currently from the technology.

In the United States we have an interesting

cooperation, quite obvious, quite plain cooperation between the US Department of Agriculture and the American Farm Bureau which is a major farm insurer and lobby group throughout the country. And also the associations that represent the biotechnology companies and the pharmaceutical business and the chemical companies which are all integrally related to one another in their, in the advance of this technology. So there's quite a cooperative effort going on to aggressively promote and research and develop and t bring to market these GMO crops. In fact we see very well documented individuals, specific individuals, moving back and forth between the biotechnology industry and the regulatory agencies. So I mean obviously from a human stand point one can appreciate that ones prospective would be very much formed by that experience of going back and forth.

Just to give you a little bit of background about the US regularities system. It's very commonly said that the crops and the foods are safe and beneficial. But the truth of the matter is that really there is no regulatory framework that's in place that adequately examines these crops and gives them the attention they deserve as novel organisms. In 1992 before any crops were brought to market there was a policy decision that was made to treat these GMO crops as basically the same as anything that had come before them. And likewise with the foods. So when a new crop is petitioned to be brought to market, the framework of regulations that had existed to that point are still being sort of tweaked and tried, you know, they're trying to fit these into the previous framework, the previous regulations.

There are studies that have been done that have actually acknowledged, sort of independent studies, that acknowledged some of the real problems with this. This inadequate, in some cases, an overlapping of regulations and, in some cases, gaps between the three agencies that are charged with ensuring their safety.

There's also quite well acknowledged fact that there are no new laws for permitting these products, for labeling or for post market oversight. So there's no feedback loop as to how these are doing in the field or in the supermarkets.

There are many other widely acknowledged regulatory framework issues. For example - in spite of the fact that the vast majority of Americans

when polled consistently stated that they are in favour of labeling GMO foods the US government has refused to do so. There is no labeling of food or seed so farmers don't know precisely what they are planting. There's no testing for GMO content in any products except if the export market requires it. So the average consumer in the United States, and I think it's also true in Canada, don't have any idea about what the percentage is that they are consuming. So the fact that there's no testing and no labeling means that there can be no indication of how safe these things are. You can't track who ate what when and how much. And do any kind of epidemiological study on this. So when you hear people saying we've been eating it for nine years nobody has gotten sick, nobody has died, we have no way of correlating how much GMO food people ate to any illness or disease or death that might have occurred.

The corporations - this is really important - the corporations that apply for these, both field trial permits and commercialization permission, are not required - and this is in the US and I urge you to look into it here in Canada - , they are not required to submit any independent peer review data on either the ecologically impacts or the human health effects. They submit the data they have researched and selected for submission, but they don't have to - no one does any independent review. There's review done but it's of the data that's been submitted to them. And the decisions are made only on this information. There's no independent testing. There's no money for it. And so people are - even if one wanted to do testing, it's very difficult to do so. In the case of the Food and Drug Administration it's a voluntary submission of data. The Food and Drug Administration doesn't require, doesn't mandate any health - human health impacts to be studied. It's just a notification process and I'm just not familiar with Canada but I would really encourage you to look into that question.

In the organic sector, and again I was really surprised to hear from the previous presenter that there's a 5 per cent threshold or tolerance for GMO crops. In the United States, under relatively new national organic standards, there is no threshold. It's a zero tolerance. If you're an organic grower your not allowed to call yourself such, you'll lose your certification if you knowingly plant seeds that result in food with 5 per cent or more, with any - I'm sorry - with any GMO

content. Not to mention what your customers would do even if it were allowable. So I would urge a careful look at that here in Canada from the point of view of protecting your organic sector.

In the American mid-West which is where approximately 65 per cent of the worlds acreage in GMO's is currently grown - that's really just a few states in the US four crops - it's been a huge open air experiment in genetic engineering and again I really want to underscore the fact that the data in this experiment just isn't being collected. There's really no systematic examination of the consequences or the benefits. So what we've got instead is of sort of anecdotal reports starting to come in and some small scale studies that are generally poorly funded and highly scrutinized and often dismissed as being biased.

But we are starting to see some warning trends and Dr. Clark did a very , very professional and thorough job of looking at some of those so I won't go into them. I do want to just call out a couple of examples that she didn't touch on. She mentioned that there was a BT crop system that was relatively new, newly released. And it's failing in the field in spite of all the field test and trials and so on. It's called Yield Guard and in fact it's not protecting corn plants from corn root worm damage. So it's been released, farmers have bought it and they're dealing with the fall out, the economic fall out of crop failure as a result. It was unforeseen. I mean you can do field trials on small scale acreage, but once you scale it up and you do it over time, you can run into all kinds of unexpected ecological phenomena or different treatments in the field that's just really hard to say how it's going to play out.

Another point I wanted to make about what we are starting to learn about the problems here or the short comings is that there's increasing evidence contamination of domestic varieties and in wild plant species by GMO crops is inevitable and the previous presenter from CropLife actually said that very clearly. We can not control contamination. So if we are to proceed down this path in new crops, we are defacto accepting some levels, some uncontrollable level of GMO content in our crops and our food.

A recent report by the Union of Concerned Scientists, maybe six months ago, reported that there is a wide spread, low level, but wide spread

of contamination in the seed stock. So not just in the neighbouring crops or in - it's adventitious presence in the very seed so you can't even guarantee that you will have access to GMO free seed at this point in some - in the four crops that are commercially available. And in fact organic farm - canola farmers in Canada acknowledge and AG Canada also acknowledges that they can not guarantee or certify that GMO free seed is available to farmers in Canada anymore. So we've got actually a reduction in farmer - in choice that farmers have as to what seed they plant either because the seed is contaminated or because the companies who increasingly control more and more of the seed stock aren't offering GMO free seed.

The organic Saskatchewan Directory and I think I have the name wrong, are suing for complete destruction of their organic sector in canola. They can not guarantee a GMO free organic canola any longer. So they have a class action suit that is underway right now in Saskatchewan to try to recoup some of the losses that they've experienced. So going down a GMO pathway, I would argue, is actually a reduction in choice for the farmer in the long run.

This is the home, the Canadian home of Percy Schmeiser so I'm sure, if you haven't already heard from him or someone whose worked closely with him, you're familiar with his case and the consequences of it. The transition that GMO seed patents represents is one from the farmer as a steward and a keeper and an owner of the seed to the farmer as a leaser of the seed. It's a patented seed. The farmer also doesn't own, according to the Supreme Court decision, doesn't own any progeny of the seed either. So the farmer can not save inventory year to year under the contracts that they are forced to sign when they purchase a GMO seed and they don't own the progeny, the offspring, the seeds. This is a real shift in sovereignty and authority for a farmer. There are also conditions that usually accompany the contracts and they vary region to region and seed to seed but they typically will restrict certain practices. They require the farmer to use the patented chemical that accompanies the herbicide tolerate crop. So you have to use Round Up you can't use a generic version. Which is, of course, part of the point to guarantee future Round Up sales. They call upon the farmer to grant access to his land, his equipment, his records to

representatives of the company to make sure he's not mis-using or in any way violating the terms of the contract.

And there's a report that was released just a month or two ago by the Centre for Food Safety that documented approximately 100 cases of Monsanto suing farmers for violations of these contracts and some, I'm told a number of hundreds of others, who have received fines or threats of law suits, of legal action, who have just decided to pay instead of taking Monsanto to court which would be a daunting prospect for anyone.

So there's been billions of dollars spent to date on the research and development for these GMO products and virtually nothing has been spent on human or environmental health and safety testing. Given the fact that most of the world's consumers prefer not to consume GMO food the fact that the benefits to farmers are mixed and probably short term at best. And the fact that the ethical and legal questions surrounding the patenting of life and the liability for contamination dangers are looming it becomes hard to justify continuing down this path. It's worth considering other research directions and technologies that could be explored to respond to the very real challenges of farming. Think of what that \$700 million here in Canada could do in different research directions.

So I'm going to move on and talk a little bit about California which I think in some ways has some, oddly has some similarities to Prince Edward Island. The battle of the experts will continue, no doubt, but community by community we, I think, have the responsibility to be considering what it is we want- in our agricultural future and that would be the question I would just invite you to keep in your mind constantly throughout these hearings and into your decision making. Does genetic engineering serve what you've got already and what you want to have in the future.? And put that question into a bigger - the question of a GMO free zone into a bigger context. You're in good company. There are conversations like this going all around the world and there are examples I'll mention at the end of other regions that are choosing to stay GMO free for variety of good reasons.

So in California the largest producer in the United States of agriculture and where agriculture is the number one economic driver it's also the most

diverse agricultural region. We produce approximately 350 different kinds of fruits and vegetables and nuts and grains and trees and animals; a big food exporter so we're very reliant on keeping our export markets happy and it's the birthplace of modern organic agriculture and sustainable agriculture.

Currently like on PEI there's very little GMO crops produced. Only cotton really of any kind of scale and a little bit of feed corn, very small amount. But there are dozens of field trials underway. In a variety of crops. Everything from strawberries to grapes to turf grass that doesn't grow very tall so you don't have to mow it as often, to walnuts, peas, alfalfa and there are a whole bunch of different traits that are being researched. Again all very hopeful prospects some of which you know could really help with significant problems for farmers. Others which are probably a pipe dreams.

In light of all these research efforts we in California realize that we may not be free of GMO crop for much longer. In fact just a year and a half ago a Liberty Link Rice was approved that is produced by Bayer Corporation - it's another herbicide tolerate variety. And this is a good case study actually of another issue and problem to be made aware which is the phenomena of a publicly available variety. This Liberty Link Rice was developed over years of traditional plant breeding and it was funded by the rice industry by Rice farmers tying themselves a certain amount per 100 weight of rice to go into a farmer directed research program. So this medium grain white rice was developed very well suited to California's rice growing conditions. Bayer Corporation took it, it wasn't patented. They took the rice and they inserted a sequence of genes and then patented it and called it Liberty Link and are now intending to try to sell it back to farmers. And this is, I think, quite understandably been sort of, - at least met with scepticism or everything ranging from scepticism to outrage that that kind of money, that kind of public trust and investment would be privatized in that way.

We also looking at Round Up ready alfalfa. It's been very close to approval and it will probably be available within the year. Whether it's grown in California is another question. Once the crop has achieved federal approval it rarely gets examined any further at the state level. That's true of pretty much any state in the US. So there's really no

other regulatory process that will impede its availability to farmers and I think that's also true in Canada. So on PEI you would not - unless you setup your own mechanism - you would not have another opportunity to look and see if you wanted to, you know, allow the introduction of a crop.

So before it comes we in California and you in PEI have an opportunity here to make some reasoned decisions about what you want to do. And whether it suits your vision for yourselves. So in California we - couple of examples of where this is taking us - California is a pretty big rice producers, it's the second largest rice producing state in the US and about a year ago there was a small pharmaceutical company called Ventura Biosciences that attempted to bring to a commercial scale production a pharmaceutical rice, two different varieties of pharmaceutical rice.

This is a rice that had been genetically engineered with human genes in order to produce human proteins for extraction and made into medicine or formula for some medical purpose. They had been field testing this stuff in the heart of rice producing area of California and petitioned to expand that acreage, you know, some hundreds in the first year or two and then up to several thousand acres. Obviously this was alarming not only to consumers with the thought of potentially eating human food with, you know, food with human genes in it - all kinds of reasons to be concerned about that. But also to the rice industry obviously because it presented such a threat to their markets. There's really a very low tolerance in most place in the world to any GMO food let alone one that has drugs in it that haven't been approved for human consumption yet.

So there were negotiations with the industry group, the Rice Commission of California, many concerns raised by farmers. The compromise that was reached was to move it down into the southern part of the state, a few hundred miles away from the main rice-growing valley, but for many people, it wasn't acceptable. There were still all kinds of possibilities for contamination, whether by transporting it from where it was grown from where it could be produced. There was no restriction on where - rather, not produced, but processed. There was no restriction on where it could be milled and further processed, so transporting the rice presented a risk.

There are birds that migrate in the millions through that, you know, along the length of California, potentially carrying some of this drugged rice with them, not to mention any potential impacts on the birds themselves. It's an anti-microbial protein, and that could have unintended effects, none of which have been studied. So this proposal was eventually rejected by the department of agriculture at the state level in response to all of this hue and cry that came about. And what they did is they just decided to stall the decision. They didn't close the door to it. They just said not this year. We need to get some public input and look at this a little more carefully.

That company has since decided to relocate its operations outside of California to another state - Missouri - which also produces rice, saying that they were seeking out a more favourable regulatory environment - was their phrase - and rice producers in Missouri are now fighting this potential threat for some of the very same reasons.

So I bring this to your attention as a case study on what can happen in spite of a regulatory system being in place that some would have you believe is adequate. This is a small, privately-held, non-agricultural company and the threat that they represent to the food supply and to the markets and pocketbooks of American rice farmers is significant. The US federal regulatory system did virtually nothing to forestall this. And it required, as I said, a mobilization of farmers and environmentalist consumers to prevent it and that's a very expensive and time-consuming and challenging thing to have to put yourself through as a community, as a state, as a system, over and over again, case by case, every time. There's no doubt that zero contamination is achievable in this kind of situation. So the question is will we tolerate anything?

The other case study I wanted to bring to your attention was the fact that in March of 2004, a small - it's not a small county, but it's a, low population, but large agricultural county north of the San Francisco Bay area called Mendocino passed into law a permanent ban on the production of all GMO organisms. This includes crops, animals, trees, fish and so on. This is a county scale, legally binding ordinance that citizens voted on, 57 per cent to forbid any production of GMO organisms. Not the food in the supermarkets - that's not something that can

happen at a county level - but the production of live organisms.

A second county followed suit by petitioning its board of supervisors to do the same thing, and then in November, another county passed by a citizens' initiative. So three failed in November and one passed, and there are several other groups. There's another one on a ballot in 2005, and there are somewhere between six and 12 other counties that are organizing community grassroots groups to do likewise, to pass GMO-free bans or actually future versions of this will probably be moratoria, 10-year temporary bans.

Andy Mooney (PC): I have just a question here before you go on. Did you say Mendocino County?

Renata Brillinger: Mendocino, yeah.

Andy Mooney (PC): Or Mendocino. Hypothetically speaking, lets say there's two or three counties there that have a complete ban on GMO. Most farms are buying seed in from, Mendocino County or whatever, they'd probably be buying the seed in from elsewhere.

Renata Brillinger: Right.

Andy Mooney (PC): Well, let's say one of these farmers that are in this county, whether it's through buying seed through other sources or maybe it's a hurricane that takes cross-pollination, whatever, so what happens to the farm if it is proven that there is a GMO plant on their farm, as far as being able to move their product? The concern, like basically, if PEI, was to ban GMO, A2 blight that hit potatoes here, we didn't have A2 blight here for years and years and years, and there was a hurricane that came in and you could almost track where the blight hit Prince Edward Island and it was a straight line across where the wind carried it that we had it. If PEI was GMO-free, all of a sudden you have either some type of weather, probably something comes through and cross-pollination in plants or whatever and you have it here, what the hell happens to the farms that happen to have it?

I mean, when you look at - as an example, when we had the potato wart in potatoes and basically the federal government held it up and said look what we got. And the US closed the border. They completely decimated the markets. I mean, this is

a different topic, but it kept us out of the marketplace until everyone else filled our markets. We can't get them back. I mean, that's what I'm concerned with.

Renata Brillinger: Yeah, I understand your question, and it's an important one and it comes down to how you would write such an initiative, first of all, or such a law - of course, the devil's in the details and how it gets interpreted.

None of these county bans have been tested in law or in practice, so it's a little bit unclear how a situation you just described would play out. But the enforcement of it, which I will touch upon here, maybe just go ahead and do that now, it's up to the agricultural commissioner - which there's one for every county - and it would be his or her job to decide how to proceed once contamination is evident. And there are various options that can be, again, articulated in the legislation.

In the case of inadvertent contamination - it's not the farmer's fault, it shows up somehow, they don't know how - either the cross of boundary of, you know, county boundary or whatever, the agricultural commissioner can just deal with the problem, which involves removing the crop, but not fining or charging the person with anything deliberate.

Andy Mooney (PC): So you have all your eggs in one basket as a farmer and you're growing a specific crop and then you have either cross-pollination or through purchase of your seed, you have a GMO and so if this commissioner says you can't sell your crop, that farmer's bankrupt in one fell swoop because people in the area voted against having it. That's what concerns me.

Renata Brillinger: Well, there are also ways that you could respond to such an event. You could decide to compensate a farmer; as a region, you could do that - help them get out of that situation. This is where you get to talk about these questions if you decide this is a way to proceed. In the case on PEI, you have a much better chance of not running into that problem because you're an Island. I mean, you actually have a theoretical chance of keeping yourself GMO-free. In a state like California with 50 counties, one or two or three going GMO-free is as much a political statement as it is a practical one, but it's also a marketing position.

You know, in a world where - in a future world, let's say, where advantageous presence is allowed, where thresholds get established, where the consumer can't be sure what they're eating if that's the way we continue and follow the advice of CropLife and others - then the consumer's going to be in a position to want to have a better chance, you know, of some consumers, of not eating GMO food, and there's going to be - there is currently, and I think there will continue to be, premiums paid by consumers who want that choice. So it's also a valuable marketing decision to say: We're going to do everything we can to keep ourselves GMO-free as a community, as an Island, in your case.

So just a couple of other key pieces that characterize these laws. That's one of them. That's really one of the things that people spoke in favour of and voted in favour of was this marketing advantage that they perceived that it was in their best economic interest to take this direction. I think Dr. Clark did an adequate job - or a better-than-adequate job - of actually characterizing some of the issues around market losses that speak to this advantage, so I'll leave that part out.

I think for a lot of these communities, it came down to the question of how to protect their farmers. It can be characterized as a right to a farm issue if one farmer is seeking out a GMO-free market and a neighbouring farmer is seeking out whatever the current GM product is of the day, that non-GMO farmer has no protection and in fact, has no choice about whether or not they'll be able to keep their GMO-free market because contamination is inevitable.

So if the market standard is zero, which it is in Japan and in much of Europe - not the legal standard, but the consumer standard. If the consumer doesn't want to eat GMO food, which is true in Europe and it's true in many parts of Asia, then the farmer will lose the market regardless of what the regulations say and the organic farmers certainly will, at least in the United States.

And the other big reason that was cited by a lot of these counties was the protection and their concern around the diversity of their local ecosystems. Contamination not only travels between domestic crops, but between some domestic crops and their wild relatives. There's untold, unstudied potential consequences of ecological harm to

insects, birds, other plants. It's really animals. It hasn't been studied, and no one knows, and they chose to be cautious. They chose to err on the side of caution, and fundamentally, they're protecting their democratic rights to decide on what they want in their agricultural future for their environment, for their public health and for their economies. They're responding to what they assess to be a lack of adequate testing and oversight and a rush to commercialize these crops.

The initiatives are being modeled on nuisance abatement protocols. There are lots of precedents for this. You look at noxious weeds or pesticide drift or the handling of aggressive animals. If you've got a dangerous dog, there are precedents for taking that dog out of the society and abating the potential harm. Enforcement, as I mentioned, is carried out by the agricultural commissioner and as I said, also if there's inadvertent GMO production, the county would bear the cost of that rather than the violator. If the violator is deliberately or knowingly plants a GMO crop, they would pay a fine and cover the cost to the county of dealing with this problem.

In some counties now, we're seeing - in the variations that are arising, we're seeing exemptions being made, and this would be another possibility here. You could, for example, as is happening in Sonoma County, exempt animal feed, where there can be live seed present. We were told by our dairy producers that they couldn't obtain GMO-free animal feed. It's just not available on the market at an affordable cost, so that county decided to exempt animal feed, which might have live seed in it and could present a danger, but it was a compromise and a trade-off that was made to prevent those dairy producers from going out of business, which would have been the unintended impact of these initiatives.

I mean, they really are - I think - especially increasingly as we see them evolve and mature - they're rising out of a collaboration between farmers and citizens in their communities. So the intention is not to reduce or not to harm farmers by passing these laws. So that was one example. There are also exemptions being made for medical bio-technology. So bio-technology that's being done in laboratories to produce medicines is explicitly exempt, and there are examples of language, one of which I gave you a copy of that and others which are becoming available, which

I can provide to you later if you'd like.

So just in closing, I'd like to just highlight some of the ways in which citizens around the world are actually expressing their opposition to genetic engineering. A seed-labeling bill was passed into law in the state of Vermont that requires GMO seed to be labeled, so that at least a farmer knows what they're planting. Right now, he can't tell. So any seed that has more than 5 per cent GMO content now has to be labeled in the state of Vermont.

There's been a moratorium in the European Union. It's been lifted recently, but it's been replaced by really, a whole set of legislation that requires pre-market health and safety testing, stringent regulations requiring a co-ordinated and public notification system. So again, if you're a farmer, you can find out what your neighbour is growing. That's not available in Canada or the United States.

There's a food feed and seed labeling law there in the EU now, and there's a law that puts the burden of liability on the farmer who's growing the GMO crop if their neighbour gets contaminated. This liability question hasn't been resolved here at all. We don't know who's going to pay for damages. Is it going to be the farmer who bought and planted the GMO seed? Is it going to be the person who gets contaminated, who loses their market. They're forced to just deal with it. Or is it going to be the government or is it going to be the developer of the technology?

There are five liability bills that are working their way through five different states in the US that would place the burden of liability on the developer if unintended contamination happens. If a GMO farmer does everything they can to produce a GMO product without contaminating their neighbour if they followed the contract and the guidelines of the developer, of the patent holder, but their neighbour still gets contaminated. In that case, the developer would be responsible if these pass into law.

The wheat story is a really interesting one. I'll just speak a little bit about it, but it was a collaboration between Canadian and American wheat growers that forced the withdrawal by Monsanto of its attempts to commercialize GMO wheat, and that was - the wheat industry did an economic survey

that found that their customers didn't want to eat it and they would suffer a huge economic loss - 30 to 50 per cent of their market. Their export market would disappear if they adopted GMO wheat in the first two to five years. That was what an independent agricultural economist found when he did this report, and once the industry heard that, it was pretty much a no-brainer as far as how they were going to proceed. There was no way they wanted to lose 30 to 50 per cent of their export market. So Monsanto has since indefinitely shelved their attempts to bring that product to market.

There are bills in three states that would ban the use of food crops to produce drugs, ban the use of pharmaceutical crops. I wanted to point out that in Saudi Arabia, for example, the bastion of democracy, genetically engineered animals and seeds are banned entirely in that country and food with less than 1 per cent GMO content is the only thing that's allowed there. So there's a certain amount of governmental transparency that Saudi Arabia is exhibiting that Canada and the US are not on this question. South Africa passed a bio-diversity act - this is another variation on the choices here. Their bio-diversity act requires a complete environmental assessment prior to the introduction of any GMO crops. It doesn't sound that radical, but it's not something that happens here.

The USDA has never done - or rather the EPA - the Environmental Protection Agency in the United States has never done a full-scale environmental assessment of the impacts. They do a sort of cursory review. They do call it an environmental assessment, but it's not. They have two tiers and they've only done the more smaller-scale version on any new GMO crops. And as far as GMO-free zones go, these are being established around the world in various jurisdictions - cities, townships, counties, provinces and states. Some examples are in the EU, where GMO-free zones are proliferating rapidly in response to the government's co-existence policy. Communities have decided they don't trust that co-existence is possible so in 100 regional and 3,500 sub-regional areas in 22 EU countries, they've completely banned GMO crop production. There are also legally binding GMO-free zones in New Zealand, Australia, Poland, the Philippines, Croatia, Brazil and perhaps we'll see them in Mexico soon because the federal government position on the

production of GMO crops is being weakened as we speak.

So all of these responses have in common the fact that the citizens and governments of these areas have decided that the potential cost - to the agricultural economy, to the sovereignty of their farms, to bio-diversity and to the reputation of the region - outweigh the promised, but yet unproven benefits of genetic engineering.

Just in closing, I'd like to say that very plainly, I really look forward to the day when we can move beyond the conversation about how good genetic engineering is and move on to the question of what are the needs and the visions of farmers and farming communities, and apply the same ingenuity, the same technological prowess, the same economic commitment, to resources that can develop other solutions, really, in partnership with farmers, in participation with farmers and their self-identified needs to respond to their challenges. Until then, I applaud you for your efforts here and I wish you luck as you continue your deliberations, and I'd be happy to answer any questions.

Wilbur MacDonald (PC) (Chair): Fred?

Fred McCardle (PC): I've got an environment publication discussing the ballot in California. The headline is: Anti bio-tech ballot initiatives fail in California. It was Marin County that you say that passed it didn't grow any bio-technology crops. It was a carefully-selected county. Is that correct?

Renata Brillinger: Carefully selected by the citizens of the counties.

Fred McCardle (PC): By the environmental movement.

Renata Brillinger: No, it was the citizens of Marin County and of Mendocino and of Trinity County and of three others. It was not a co-ordinated effort or a selection process.

Fred McCardle (PC): Well, this opposition to the new technology came from the University of California, right?

Renata Brillinger: Right. The University of California is heavily invested in bio-technology.

Fred McCardle (PC): And they were soundly

beaten in Butte, Humboldt, and San Luis Obispo County.

Renata Brillinger: Obispo, right. Yes, that's true.

Fred McCardle (PC): But it was supported in Marin County, where there are no bio-tech crops grown at all, right?

Renata Brillinger: There aren't any grown in most of those counties. There are small, perhaps, amounts of corn grown usually for use in animal feed by the farmer who's growing the animals, so they were all in that same situation.

Fred McCardle (PC): But of the 50 counties in California, this is a very carefully selected county.

Renata Brillinger: They happened in counties where groups of people rose up and identified themselves as concerned about this issue and organized around it - almost all volunteers. They were not selected by a higher-up entity. Is that what you were wondering about?

Fred McCardle (PC): Well, the University of California was very strongly opposed to that though.

Renata Brillinger: They were. Yeah, they were. They, as I said, received a lot of money from the bio-technology industry to continue their research. They've been - as have most California universities, public universities - been losing federal assistance and state assistance in their research efforts and so they have had to turn - or they have chosen to turn - to private corporations to continue to keep their departments open.

Wilbur MacDonald (PC) (Chair): Wayne?

Wayne Collins (PC): Just a short question. That county north of San Francisco, is it Mendocino County?

Renata Brillinger: Yes.

Wayne Collins (PC): Have they tried to, or do they plan to try to capitalize on the fact that they have declared themselves a GMO-free zone in a market like San Francisco, a major metropolitan market? One would think that if you're going to find a growing niche market, if you will, that would be a

good place to start.

Renata Brillinger: Yes.

Wayne Collins (PC): Are they making any inroads?

Renata Brillinger: Yes. Now that was only eight months ago, or less than a year ago. They have - what I know that they've done is they have developed a logo that says GMO-free Mendocino that's available to any farmer. Many of their farmers are already direct-marketed in farmer's markets or in CSAs or, you know, directly to restaurants or other venues like that.

Wayne Collins (PC): Is it too early to tell yet whether its an improvement on the pocketbooks?

Renata Brillinger: It's working. Well, it's too early to tell from sort of a scientific perspective. Nobody's studied it. Yes, it's too early to tell.

Wayne Collins (PC): But that would be significant and I would encourage them to try to study it because I keep coming back all the time to, you know, where's the marketplace? Where's the economic benefit here? And if you could do that here with a city like San Francisco -

Renata Brillinger: Yeah, I agree, and there are two other similar sort of questions being asked through different reports. One is in the rice industry in California working with the leaders in the rice industry to actually commission a report on that question, a prospective report like the wheat industry did that showed such an advantage, and I believe there's one being talked about here on Prince Edward Island that would do the same for you, to try to forecast.

Wilbur MacDonald (PC) (Chair): Ron MacKinley.

Ron MacKinley (L): Thank you. Number one is the 5 per cent. I'm not sure if that's Canada, but here, from what I found out, was in PEI, you're allowed 5 per cent GMO products or 5 per cent . . .

Renata Brillinger: In organics?

Ron MacKinley (L): Yeah, or you're allowed 5 per cent . . .

Fred McCardle (PC): That's not necessarily true.

Renata Brillinger: I can't speak to it because I don't know the Canadian regulations.

Ron MacKinley (L): Well, the lady that was here before stated that Ms. Dewar . . .

Fred McCardle (PC): 5 per cent tolerance.

Ron MacKinley (L): 5 per cent tolerance.

Renata Brillinger: I think it's a question that . . .

Ron MacKinley (L): And that was chemicals, too, because I was talking about the chemical drift into organic fields.

Renata Brillinger: That may be true for pesticides. For GMOs, I think there are people in this room who actually have a definitive answer to that and I don't know if your process allows for them to come to the microphone, but I can't answer it definitively myself.

Ron MacKinley (L): No, that's all right. But in your county, it's 1 per cent, right? Or zero?

Renata Brillinger: Yeah, the organic centers do not allow for knowing production of GMO foods as an organic producer.

Ron MacKinley (L): All right. You quoted there that the dairy farms can use genetically modified feed.

Renata Brillinger: Right.

Ron MacKinley (L): So a dairy cow could transplant that genetically modified feed to the fields and it would grow?

Renata Brillinger: Theoretically, yeah.

Ron MacKinley (L): Yeah. Well, it could grow.

Renata Brillinger: Yeah, theoretically.

Ron MacKinley (L): But then you are, got contamination from . . .

Renata Brillinger: Yeah, that was . . .

Ron MacKinley (L): So you're not really zero at all.

Renata Brillinger: Well, that was . . .

Ron MacKinley (L): If you were zero, it means zero. But if you're growing a county and a dairy cow, as being a farmer, and if you feed the feed, some of it would pass through and in theory would grow.

Renata Brillinger: Well, I think that would be great if you could actually achieve a ban of that kind of rigidity. What we chose - there's a group in Sonoma County that, which is actually where I live - that chose to support its dairy farmers. That was the higher priority given the marketplace, given the fact that they can't get GMO-free feed. They chose to prioritize that above the very small likelihood that GMO-free seed would not only not be eaten by the cattle, but would then grow up and survive to its full cycle and then seed and, you know, contaminate.

Ron MacKinley (L): Well, especially if it was fed to horses also. I'd assume you'd have a number of horses and a lot of horses eat it and they pass it through and it grows up as food again. That's how we get into this problem with importing western grains on Prince Edward Island. We have like a wild oats, cause PEI was free of wild oats and then all of a sudden, it came in the pig feed or the cow feed, and then all of a sudden, the field's . . . wondering where all these wild oats came from.

Renata Brillinger: Absolutely. Well, I think that if you can pull that off with enough support from your agricultural sector, I think you're absolutely right. That is the ideal scenario is you would not exempt animal feed, but you'd also have to respond to the challenge that those dairy producers are . . .

Ron MacKinley (L): All I'm pointing out is even though you're GMO-free, your county, your theory . . .

Renata Brillinger: We have an exemption.

Ron MacKinley (L): You have an exemption. You're not 100 per cent free.

Renata Brillinger: Yeah, and that's right.

Ron MacKinley (L): Number two is when this started first, I watched a lot of TV and Monsanto seemed to get off on the wrong footsteps was hiring former FBI agents to go in and sort of police this.

How did that work? It was a few years ago, but I remember, you know, watching the stories and it's where they went in. They even went as far as spraying Roundup Ready on farmers' fields to see. Now were those farmers breaking the law by taking genetically modified seed and not paying their premium? Was that what happened or was it cross-pollination?

Renata Brillinger: They were violating their contract if they either knowingly or unknowingly had GMO seed on their property and had not paid Monsanto for it, and Monsanto absolutely sent in, and still does send in enforcement officers checking on farmers as to their practices and some of them were former FBI agents. That's the story, anyway. I haven't . . .

Ron MacKinley (L): Well, that's what it was about.

Renata Brillinger: Yeah, so it's - all of what you said is true, and the question I find interesting is whether that's acceptable and desirable?

Ron MacKinley (L): Well, the thing is it didn't go over that well with me, being a farmer.

Renata Brillinger: No, I wouldn't think so.

Ron MacKinley (L): But now if those farmers were knowingly taking GMO seed and planting GMO seed and not paying the royalties for everything, well, yeah, maybe it is, but if this is cross-pollination; for instance, the farmer next to him had genetically modified soybeans and the cross-pollination came over to his. Now I know enough about cross-pollination, not going to get 80 per cent of the crop. Do you know if they had a factor of how much was allowed in the field before they moved in?

Renata Brillinger: I think it's safe to say that there are many farmers in that situation you just described where there's some low level of contamination occurring. That's, I think, widely agreed upon, but not widely studied, and the question then is who has Monsanto chosen to go after and of course, they only have 75 people in

their legal department. They only spend a few million dollars a year on prosecuting those people and pursuing them.

Ron MacKinley (L): My question is did those farmers - they had genetically modified - the seeds grown in the property because if you have Round Up Ready doesn't kill us so there must be genetically modified soybean. The question I have like was it a 5 per cent or 10 per cent or something - were the farmers being dishonest when they planted the seed and legitimate go in or was it cross pollination that they moved these FPI people in.

Renata Brillinger: I think you probably could see a whole spectrum of scenarios. Everything from complete victim of contamination to knowing violator of a contract. And again I would pose the really important question here is. Is that the system of agriculture that we are interested in having? Are we interested in having a system where Monsanto sends in people, sprays their field with Round Up if it lives, it's a violated contract, if it dies, oh sorry, the crops gone.

Ron MacKinley (L): Yes, and the farmer can't afford that.

Renata Brillinger: And the farmer can't afford to deal with that.

Ron MacKinley (L): We can't afford to go and sue Monsanto.

Renata Brillinger: Exactly. It's a ridiculous proposition.

Ron MacKinley (L): We know that.

Renata Brillinger: Yes.

Ron MacKinley (L): Farmers are farmers. They are not legal people and they don't have the funds.

Wilbur MacDonald (PC) (Chair): Can Andy ask one question.

Ron MacKinley (L): Yes.

Wilbur MacDonald (PC) (Chair): One question, we have to move on.

Andy Mooney (PC): Anyway, I want to thank you for your presentation and it - I'm intrigued even with this Percy Schmeiser case from basically looking into some of the court rulings. It's stated that he had sprayed a three acre section of his property that he suspected there was GMO crop in. The thing is when he sprayed it apparently there was a tremendous amount of plants survived which proved they were Round Up Ready. Where he fell down is that he kept that seed separate and then propagated or planted it next year knowing that he was planting a GMO crop. So the court ruled anyway and that's where - so that's why I'm a little suspicious of that -

Renata Brillinger: Of that story.

Andy Mooney (PC): Yes.

Renata Brillinger: Yes.

Andy Mooney (PC): Anyway -

Renata Brillinger: Could I comment briefly on it. I don't know for sure if this is Percy's story because of course he'd have to say that, but think about the context he was operating in then, that was the first year of the introduction of GMO canola, in 96 that he noticed at the end of that season that there was some crops that were resistant to it. He hadn't planted - I think the courts found definitively that there was no evidence that he had bought the seed or that rather he obtained the seed without signing a contract and without paying Monsanto. So he - it had drifted onto his property, that's for sure, and he observed the trait of Round Up resistance.

But it was in 1996 before this was very widely used at all. I took note of the Croplife chart where the peak in canola correction didn't happen until a few years after that or the start or the beginning of the rise. So almost nobody was growing it and I don't know if anybody understood the ramifications of the contracts that were signed. Farmers to this day don't really understand what they are necessarily signing. I don't know if you read the small print, but it's a pretty substantial contract.

Andy Mooney (PC): Before the Chair cuts me off here. I just want to throw - this is the trouble I have and why it's interesting being on this committee. We have - some people let's say are really opposed to any work done on GMO that gives us -

in different crop resistance to different - whether it be weeds or different pests. On the same token, we have the people out there that are basically saying welcome to our poison playground on Prince Edward Island, that's really hurting our markets.

We have to look after our crops, I mean that's the way it is and it's either one way or the other. And there's where the concern lies with me that if we completely tie the hands here on Prince Edward Island that if in five years time there's a strain of potato that comes out that has tremendous resistance that seems quite safe, where are we going to be then? Because it's just kind of hard to have it both ways.

The only other point I just wanted to throw out and this has been going to talk to different producers. Right now in Canada, our main two markets on the potato industry and - even the grocery chains are Sobey's and Loblaw's right. Basically Sobey's is a Nova Scotia based company that are pretty well Eastern Canada and Loblaw's is further west. If we went and said PEI is GMO free, are they going to let us into that market? For the simple fact is they are not going to let Prince Edward Island control their access to certain products when they're not an Island company to begin with and if we only have 20 or 30 per cent of the market. They're just as soon shut us out. So they don't have that controversy in the stores. Like that's the only concern I have.

I just hope that anything that we can do is of benefit. Like the thing is, they're just not going to let us be the only game in town where we can ask for more money.

Renata Brillinger: Well I think your pointing to some really important questions that would be best probably answered in a form of a market analysis and survey and it may be that you decide for yourselves that you have the opportunity to actually meet the needs of markets other than those. Perhaps elsewhere in the world, but maybe not, that actually would want and pay you a premium for a GMO free products. I don't know the answer to that, but I think it's one of the essential questions in front of you.

Andy Mooney (PC): Thank you very much.

Wilbur MacDonald (PC) (Chair): Thank you very

much. Thank you Andy. That was three questions in one.

APPLAUSE

Wilbur MacDonald (PC) (Chair): I want to thank you for coming all the way from California.

Renata Brillinger: You're very welcome.

Wilbur MacDonald (PC) (Chair): And we certainly appreciate that you have come this far to present to us today. So thank you very much.

Renata Brillinger: Thank you.

Part IV - Dominique Cruchet

Wilbur MacDonald (PC) (Chair): So now we have Dominique Cruchet, am I saying that right? You're from the Confederation -

Dominique Cruchet: No.

Marian Johnston (Committee Clerk): Private citizen.

Wilbur MacDonald (PC) (Chair): Oh private citizen. Sir, I'm going ask you to give us about a ten to 15 minute summary. Oh you have a power - we do have one more presenter. Is the committee prepared to stay til 5pm

Unidentified: Yes.

Fred McCardle (PC): You can buy lunch.

Wilbur MacDonald (PC) (Chair): Okay. You come home with me, I'll get you lunch. While he's getting ready, can we have a little discussion. We have two more meetings scheduled, next Wednesday and the one after that.

Marian Johnston (Clerk Assistant): (Indistinct) .

Wilbur MacDonald (PC) (Chair): Today. And do we want to meet for a day or two if we could - morning and afternoon. Underneath your agenda for today is the summary of the last meeting. You all noticed that. Okay. Could we pick out some times where we could.

Ron MacKinley (L): He's ready now.

Wilbur MacDonald (PC) (Chair): Okay. No he's not quite ready yet.

Fred McCardle (PC): Are we meeting on the 2nd of March, Mr. Chairman?

Wilbur MacDonald (PC) (Chair): We are meeting on March 2nd and March 9th .

Fred McCardle (PC): (Indistinct) .

Marian Johnston (Clerk Assistant): We already are.

Fred McCardle (PC): We are.

Marian Johnston (Clerk Assistant): We are, but these are addition to those.

Fred McCardle (PC): (Indistinct) .

Wilbur MacDonald (PC) (Chair): Yes.

Marian Johnston (Clerk Assistant): Full day.

Fred McCardle (PC): Mr. Chairman how far - can we stop taking people to present to this committee?

Wilbur MacDonald (PC) (Chair): Yes we would be, wouldn't we?

Marian Johnston (Clerk Assistant): I haven't really gotten any new - some written submissions are coming in -

Fred McCardle (PC): There are a lot of important issues in the agricultural industry besides GMO that we could be well dealing with. Like are we going to waste our whole winter on this topic?

Wilbur MacDonald (PC) (Chair): Looks that way.

Fred McCardle (PC): What about the crisis in the potato industry? The hog industry, or the beef industry?

Wilbur MacDonald (PC) (Chair): Well our mandate is strictly here .

Fred McCardle (PC): We are a one trick (Indistinct) .

Ron MacKinley (L): (Indistinct) House is in session.

Wilbur MacDonald (PC) (Chair): Yes, so we're trying to arrange another day maybe besides Wednesday okay. We'll contact your offices.

Ron MacKinley (L): You shut Public Accounts down so there's no more investigation into Polar Foods.

Wilbur MacDonald (PC) (Chair): That's on Tuesday, so maybe we can meet Tuesday morning and Wednesday afternoon. Does that sound reasonable?

Ron MacKinley (L): Good.

Wilbur MacDonald (PC) (Chair): Okay.

Wilfred Arsenault (PC): Mr. Chair, is it possible to have only day sessions because I guess, with the numbers of presentation yet to come.

Wilbur MacDonald (PC) (Chair): Yes.

Wilfred Arsenault (PC): It might be nice to maybe speed it up a little bit.

Wilbur MacDonald (PC) (Chair): We'll try.

Fred McCardle (PC): We're three and a half hours into and only three people.

Wilbur MacDonald (PC) (Chair): Yes.

Fred McCardle (PC): Why don't we give people 20 minutes?

Ron MacKinley (L): Well we got to ask some questions, Fred. I mean there's no sense coming in here and not asking questions. You might just invite them to send in a brief and go home.

Fred McCardle (PC): Well no, I'll be digging my potatoes before we're done here.

Ron MacKinley (L): Well that's your job as a MLA.

Fred McCardle (PC): I don't have time to listen to this (Indistinct)

Ron MacKinley (L): If you want to get elected, you

got to do your time.

Wilbur MacDonald (PC) (Chair): I'll let you fellows argue that later. Right now we're going to hear from Dominique.

Fred McCardle (PC): I'll decide this real quick.

Wilbur MacDonald (PC) (Chair): Dominique, would you -

Eva Rodgerson (PC): Could we get some background on who he is and -

Wilbur MacDonald (PC) (Chair): Could you give us a little bit of background on yourself, sir, where your from and so on.

Dominique Cruchet: I came to this hearing as a concerned citizen for - I live on PEI. I'm a resident of PEI.

Wilbur MacDonald (PC) (Chair): Yes.

Dominique Cruchet: And I have a piece of land on the Island and I'm from France originally so I decided to bring into this presentation some information from the French Farming Association that's a second union in France that's called the Confédération Paysanne and some citizen groups that have worked on the GMO problem and that particularly worked on the argumentation on the issue of GMO in the country.

What I took was a report that was done in 2004 at the Social Forum in (Indistinct) . So what I did I did a little extract of this Social Forum so the point of view that I'm presenting here is the point of view of 20 scientists that work on different aspects of the implication of GMO. So I'm going to read you this document because I have to deal with my accents.

Wilbur MacDonald (PC) (Chair): Okay that's fine.

Dominique Cruchet: So the document that I worked on are the Collectif Français pour une conférence de Citoyens, it's a French collective for the French. You can find all those - I'll leave you the information, all those documents are on the internet and the second document was the research of GMO by the association that's called Attack, it's a citizen awareness association that works on different -

Wilbur MacDonald (PC) (Chair): Just a little louder if you could, sir. The microphones are just for recording purposes.

Dominique Cruchet: Yes. It's an association that works for the awareness of modernization and gives education - preferably education on that matter and this Parlon-en is the (Indistinct) of 40 scientists that frequentize the precaution system which is the conclusion of my presentation and there was another article on the 950 Canadian farmers in the west of Canada. So all those articles have been included in this presentation and I'm going to start with a little scientific information or paradigm. The document was prepared by the généticien, Brac de la Perrier, who is one of the scientists working on this. According to this geneticist, it is not a specific gene that is transferred but an artificial construction assembling genetics element from diverse organisms and it is the consequences of the whole of this construction that must be evaluated.

The difficulty of evaluating this construction is well known to scientists in molecular biology but among the public at large, there is a tendency to identify the scientific entity with the natural one. And so one speaks of genes and genomes like interchangeable pieces, and reduces a plant to the characteristics of interest for the researcher, without apprehending other vital traits.

The scientific paradigms underlying the technique of transgenetics appear increasingly fragile but the technique itself has decades of advance on a scientific understanding of the consequences.

The history of science has shown that what happens in a laboratory does not necessarily occur in the same way in a natural setting. It would not be the first time that scientists have confused the laboratory with the world.

In view of this a redefinition of the certification process and independent testing must be done by governments if they profess to be responsible. That was the point of view of this scientist in terms of what the real implication of the science in the GMO. The other part is related to the consequence on the environment and health.

The answer of the scientist is simple, the major seed producers want a fast return for their investment. The acceleration of commercialization,

without having determined the real impact is the key problem and the absence of government control is a mistake.

Observed consequences - Using open field as experimental ground, some effects are irreversible. The diffusion of transgenics by pollenisation has contaminated non transgenic canola crops in US and Canada. The insurance companies have refused to cover the risks because they cannot and have not clearly been estimated. That's for the insurance companies.

In France, most experimental cultivation is done to determine monetary profitability as well as to mix them with commercial variety but not to study the environment and health hazard. This is contrary to what is presented to the public.

The reduction of biodiversity and the adaptation of the predator to the transgene brings about a greater use of pesticides contrary to all propaganda from GMO producers. Furthermore some micro-reactions in the soil in contact with the transgenic roots have toxic affects which are unstudied.

Some scientific talk about Pandora's Box and insist on demanding a serious moratorium taking into consideration health issues instead of shareholders profits. The possible risks. One characteristic of transgenetic plants is to either secrete themselves or tolerate a herbicide. In this case, the pesticide concentrate was in the crop. The use of transgenic seeds to feed animals, particularly corn and canola raised the question of what happens with the meat and the milk content coming from such animals.

What is the impact on the consumer - Moreover no tracking responsibility nor sanitary surveillance. Another risk is the interference with the antibiotic in human medicine and the possible development of microbic germs from viral recombinations facilitated by GMO.

Also, the risk attached to the crossing of the species barrier such as allergy producing foods and weakening of the immune system as already noted in the laboratory.

The Health Benefits are still to be proven.

In the opinion of scientists the GMO is still very

experimental and neither the farmer's fields nor the consumer's plate should be taken as laboratory sites.

Companies are so concerned with the negative impact of the GMO on public perception, they are so concerned about that, that they refuse all labeling mentioning the content of their produce.

The other aspect that hasn't been really talked about. I think here is the privatization of living matter.

Legislation allowing patents on biological matter with or without transformation or on a process allowing its reproduction even if it exists in a natural state, opens the door to a total control of nature by major corporations.

In Europe these decisions are taken by civil servants, experts and representatives of research institutions without democratic consultation.

Rich companies can patent all organisms and processes using them. Myriad genetics monopolized a genetic sequence used to test breast cancer and asked enormous royalties from labs and hospitals using this test.

The decrease of public funding for research has brought universities and public research centers to seek private money to work, making them dependent on those companies.

The patent laws is conceive for GMO's because the return is a given. No company is going to improve a seed by classical selection because from now on they want the farmer to be totally dependant on them providing seeds and making sure they pay for it. The ultimate program is the Terminator, even a eliminate the right to reproduction for the seeds.

Monopoly by multi-nationals is obviously the main concern in the privatization of living matter.

Menace for biodiversity is another one, from the very beginnings of agriculture, farmers have kept seed from one harvest to the next planting season. This practice ensures the survival and the continuation of the farming community. The diversity of the species and the adaptability to a particular region was thus maintained and is threatened today. Industrial agriculture is not the

solution everywhere and cohesion social os often maintained by traditional agricultural practices.

The WTO is directly involved in the acceleration process by wanting to impose an international agreement on world intellectual property, this agreement obliges countries to recognize patents on micro-organisms and plant varieties. The consequences are enormous when one sees the cost of registering and keeping a patent, from 100,000 to \$500,000 to register a patent organism and to contest it can cost up to \$1.6 million.

To accept GMO's is to give in and accept the privatization of cells and plants and agree with the commercialization of the world. Profit and market replace ethics and morals.

Now I'm going to talk about the NEO liberal logic into the GMO production.

The control started with the hybrids seeds, then comes the GMO and the ultimate weapon contained in the Pandora's box is the Terminator.

The scientific community is torn between their vocation for research for the question for whom their research are destined.

The public labs are not funded sufficiently to be independent and private money wants an immediate return for their investment.

Legislation protects the multinationals with strict contracts without considering pubic health and environment.

Next is the WTO tool of Biotechnology. - The basic rule of capitalism is in place, monopoly of the offer and loss of biological diversity. Rationalization of the industrial world. The latest rounds of negotiation of the WTO is organized around the principle of agriculture leaving behind the mass of local and small farmers. PEI is directly concerned in this evolution.

The impact of the GMO on the agrosystem. So far the transgenic plants seem to offer some results, although the results are contested, in the extensive industrial system. Mechanization and industrialization of food production is however, an impact that is already revealing its faults, contamination of seeds and of organic and conventional cultivation, increase of the resistance

to herbicides and pesticides and yield not corresponding to expectation. The other aspect have not been studied to produce valid argumentation for the toxicity of the transgenic product on animals will have an impact on human health and the sanitary chain.

Is it time to make another choice for agriculture in the world?

The arguments of competition on the food market is not valid. So far only a small percentage of the cultivated land in the world is being used for GMO, 4 per cent in 2004, we already talked about that, but I just mentioned it. Mainly in US, Canada and Argentina already the impact in these countries should serve as a warning for its application in the rest of the world.

Brazil, Kenya, India, Tanzania and Egypt for example are doing some research to find a way to integrate social and environmental parameters into the real cost of agriculture. It is more important that the farming population stay on the land to produce their own food instead of working on producing crops for export that require farming practices unsuited for their countries. That very choice corresponds to a desire for independence and autonomy within a diversified system. The type of seed determines the type of agriculture. The choice of GMO means the opening to a large farming area, concentration of land owners, mechanization and elimination of the farming community.

That choice is not only related to the technology nor to science but it is above all political. Dependence or elementary anatomy is the real choice.

The argument of eradicate the famine in the world was another aspect that was looked after. This is one of the arguments on the multinational. One of the desires of the multinational is to send their over production to Africa. There are two reasons for this, the moratorium in Europe even though it has been cancelled in the last year. The regulation now is that the food that has .9 per cent of GMO has to be declared and labeled on the box and since most of the population in Europe doesn't want to have any GMO, the limitation is - even though the moratorium has been left, the limitation is still very present.

The moratorium in Europe and restrictions in Asia inhibit the production on GMO and GMO's contaminated products in these countries. Sending GMO food to Africa would open the market convoited by multinationals. Zambia, who was in the critical position understood the situation and refused the transgenic food aid.

As mentioned earlier, the transgenic technology is one of rich countries inadapted to these developing countries.

The dream or miracle crop promised by the multinational is like the dream of the Green Revolution. The introduction of one variety will bring about the disappearance and the contamination of traditional crops and with the Terminator seeds waiting at the door the total dependence of farmers.

The question of liability was also raised and for this liability three possibilities have been coming out.

The first one is to wait for the harm to appear and use the actual legislation but this option gives the right to the major companies to launch lawsuits against farmers and leads to inevitable bankruptcy. The other solution was, the European solution, to take GMO risk into consideration and apply specific legislation recognizing it in its environmental risk responsibility legislation. That's the European model. The last one is to follow the Cartagena protocol and create a specific rules corresponding to the real risk including risk and responsibility and penalty related to the situation. In this protocol the principle of precaution should prevail and otherwise those that pollute must pay.

They have been looking also at GMO and communication. It's an important part of their propaganda. The main arguments are of multinationals are famine relief, the diminution of pesticide use and crops adapted to climate change. The government and multinationals associate their discourse was the notion of progress. Their science is progress and all other forms are obscurantism.

On one hand, this course eliminates all existing alternatives and discourages research in organic farming. That was the problem we were raising earlier. How much money can be given for the research on GMO and left out all the rest of the situation. On the other hand, there is a total lack of

transparency on the next step of this research. The Terminator crop and the total refusal for transparency on labeling the GMO products on the market.

This propaganda does not convince the public. If the question arises, for example in England, where a study shows that 54 per cent of the population is against GMO and 93 per cent believe that the commercialization of GMO's is financially motivated and is not in the interest of the well being of the people. In France, once the public was alerted by the tearing out of transgenics plants, there was a spectacular action by the militant of some groups that cut off some of the GMO plants and the press took on this information and after that I don't have the numbers, but I think the experimental GMO was going from 1500 hectares down to a few 100 hectares because the population didn't accept that experimentation. 71 per cent of the population rejected GMO and 700 scientists have signed a petition to begin independent research on GMO.

So to resume a bit of this presentation one can say that there is - there are no benefits on sustaining development for reducing hunger in the world, or protecting biodiversity or preserving the autonomy of population.

The only objective of multinationals is to institute patents on living matter and control the genetic patrimony in order to obtain the monopoly of the food production.

Three countries concentrate the production, USA, Canada, and Argentina represent 95 per cent of the world's GMO cultivated land. Far behind is China and when we heard earlier that the (Indistinct) of the crop in third world countries, that (Indistinct) is mainly on the BT cotton and there are no other crops that are really extending in those sort of third world countries, so that's cultivation is only 4 per cent of the cultivated land in the world.

Four species represent 98 per cent of the GMO, soya, corn - we already heard about all this and what this produce can only be partially exported and this was the hammering force of the WTO and end up in the processed food chain without knowledge of its impact on human health.

The last recommendation - five multinationals

control the market of GMO: Monsanto, DuPont-Pioneer, Syngenta, Dow and Bayer, and three others like BASF, Limagrain and Advanta are of the multinationals of this situation.

To finish this presentation, I took - the recommendation I wanted to do was a recommendation that insists on the notion of precaution. This notion was presented was presented to the French president, Chirac, because he was working on cancer research and that was one of his mandates for his present term. And 40 scientists, after meeting and discussing the problem of cancer, have signed what is called *L'appel de Paris*, which is a document stating, putting forward in case of lack or insufficient scientific evidence, the notion of precaution should prevail. This means if a substance is suspected of being harmful, it should be taken off the market and not used until further study has been done.

This document - I can give you the information on the website - has been prepared according to a declaration from Rome, information from Kyoto and all of the international declarations. The declarations take into consideration protection of the environment, preservation of the bio-diversity, right of people to live and produce life in harmony with nature.

And in view of those above considerations and in accordance with spirits of the *L'appel de Paris*, I would ask this committee to recommend that PEI become a GMO-free zone as many towns, counties and regions have already done in the world.

Wilbur MacDonald (PC) (Chair): Would you take some questions, sir.

Dominique Cruchet: Sure.

Wilbur MacDonald (PC) (Chair): Anyone wish (APPLAUSE) Any questions? Wilfred?

Wilfred Arsenault (PC): *Monsieur Cruchet, merci beaucoup pour la belle presentation.*

Mr. Cruchet, thank you very much for the fine presentation

Dominique Cruchet: *Je t'en pris.*

Wilfred Arsenault (PC): *Evidement, vous avez*

fait votre recherche et puis vos commentaires étaient très appréciés.

Obviously, you've done your research and your commentary was much appreciated.

The question I have, Mr. Chair, Dominique, could you - to your knowledge, does the WTO have a position on GMO products at this time?

Dominique Cruchet: Well, maybe not per se. There is a position. I don't know exactly the position that it has, but in the last run of negotiations, the agriculture has become one of the main points that is being raised, and what is being asked to the Third World countries to accept the importation and the production of food that is not necessarily their base for alimentation. To my understanding, that's what the direction is taking.

Wilbur MacDonald (PC) (Chair): Okay. Well, thank you very much, sir. We appreciate your coming and giving us a presentation.

Ron MacKinley (L): Where'd you say you live at now?

Dominique Cruchet: PEI, Charlottetown.

Ron MacKinley (L): Oh, in Charlottetown?

Dominique Cruchet: Yes.

Ron MacKinley (L): But where's your land holdings?

Dominique Cruchet: Rose Valley.

Ron MacKinley (L): Rose Valley? All right. Thank you.

Part V - Sandra Boswell

Wilbur MacDonald (PC) (Chair): Sandra Boswell, are you here?

Unidentified Speaker: Where the compost is.

Dominique Cruchet: Yes, right beside it.

Ron MacKinley (L): Oh, right beside it?

Dominique Cruchet: Yes.

Wilbur MacDonald (PC) (Chair): We have about 15 minutes. Our clerk has to leave and we can't proceed without her because . . .

Sandra Boswell: That's unfortunate because I like to talk. Too bad.

Wilbur MacDonald (PC) (Chair): Well, you can come back if we don't finish.

Sandra Boswell: No, no. That's okay. I think I can get my point across in that piece of time.

Wilbur MacDonald (PC) (Chair): Okay, go ahead, dear.

Sandra Boswell: Well, good afternoon. Good after-evening, I guess, almost. I wanted to speak to you from a different perspective and that is from the perspective of people that have allergies and in tolerances.

It seems to me that Monsanto and other biotechnology companies have not given the consumer any respect at all, and have totally disregarded any health problems that could occur from genetically modified organisms. The Brazilian nut is a perfect example of where they had to stop processing it because of a protein in the nut that caused severe, life-threatening allergies in some. And instead of these companies apparently talking to consumers, they make contracts with our governments and our governments don't make contracts with our people, so therefore this conversation should have been happening at least before 1995, where there seemed to be a lot of things going on in the food industry with it.

Mr. MacKinley talked about, I believe it was corn you were talking in terms of the waste from cattle, and this was exactly one of my concerns. You put BT in the corn. It's a bacteria. Many people could be sensitive to that. Adults might figure it out, but small children might not figure it out until they die from anaphylactic shock or something from it, and because there are various types of BT that can be inserted into a food product that will go through the animal's system, through the human system when they eat the corn or drink the milk or whatever it is and then on to the waste to pollute our soil where you may never be able to grow a crop of any purity again. It's a big problem.

Another big concern that we have is in regards to the old crop varieties. If we continue to allow bio-tech companies to keep inserting genes in this and genes in that and taking genes from plants, animals and humans, what are we going to have - Frankenfood and Frankenhumans? I guess so. So that's a big concern because of the pollination process that was discussed here earlier, where it can be carried from one field to another. We know about that from PVYn and any other disease that happens to get in our crops that it's a very serious thing anywhere. But on Prince Edward Island, we could be free of those things.

We just must all pull together to make sure that we keep this place freer - I'm not going to say GMO-free because I know we already have corn and soybeans and canola growing here. That is of great interest to organic growers and they have great difficulty trying to keep up with their crops.

Now I'm a little bit slow at this paper because of at about quarter to eleven last night, I was working on my paper and my computer did something that took away my files, so I'm having to go throughout this other original paper.

In regards to the allergies, there's a doctor in Scotland that's worried about this and in Germany, antibodies from persons that are allergic to the Brazilian nut, as I've talked about before, there's no warning label to let them know what's in this. So you absolutely know nothing until you have a really bad reaction and the fact that Monsanto own the patent to - and probably other techs, too - but the patents to these types of GMO foods should be of concern to everyone and they do claim that Roundup will prevent them from using more pesticides than they would need with other types of crops, say another variety, and that's just not true because growers have told me - and there's a lot of research down in the States to show - that you might actually do that the first year or so, but after that, you will use the equal amount of pesticides or more.

And it says that - research told me anyway that the United States has 8.5 million hectares in GMO plantations, so China with 1.8 million, Argentina with 1.4 million, and Canada with 1.3 million. So that's a lot of genetic food that we consumers just don't want to have on our dinner plates.

Also, the monarch butterfly - not only are allergic

people in jeopardy, the monarch butterfly is now in jeopardy from these types of plants as well. In Africa, the great concern they have with genetically engineered technology is that they have a wealth of varieties of various crops and they're really concerned that with the intrusion of GMOs that they are going to lose their old varieties and, you know, this may affect our health as well in terms of developing new medicines and that type of thing because the genetic plant may not have the same staying power that our old plants have had, and that may even go back to the oxygen that we breathe if - I didn't do a lot of research on that - but it is an area I want to research.

So to be fairly quick, those are the things that were of concern with me that they're putting - we don't know what's in our food. We don't require that a label be put on our food. Now labels are extremely important, and I'll give you an example is a soap that a person had been using for some years changed in Canada and when the new ones came out, of course, there was nothing on the label - we don't require them to have a lot of labeling. You're lucky if you get any - In this case, there weren't any, and they had changed their product to include almond oil - which, as you all know, is a nut - so that person was having very, very serious allergic reactions because there was no label on that soap that said they had changed their product and now had almond oil in it and that person was allergic to nuts. Therefore, they were constantly in a state of reaction for quite a while before the company finally decided - and that was only after complaining to the federal government - to tell the person what was in the product.

So we have every right to know - everybody, not only allergic people - but everybody has the right to know what they're eating, and right now, from margarine to potatoes - PEI tried to grow potatoes that were genetically engineered a few years ago and the Europeans wouldn't buy them - so that should be a good indicator for growers and I would say if you could keep PEI GMO-free, it's going to be a terrific marketing tool. I wouldn't worry about economic loss because people don't want to eat GMO food, and if they knew they were eating it, they probably wouldn't, and we don't know. There's been no controlled experiments to tell us how or what they do or how they might affect human health. The trials haven't been done. And I think that for Prince Edward Island to let any bio-tech industry dictate to us, then we should stand

up in one voice and say: No, this is something we don't want. We don't know enough about your product.

If I come to sell you something, you're not going to buy it from me unless I can give you an awfully good sell, so I'm not sure how these companies seem to get such a grip on government but it's like we have no government and these bio-tech companies have become our government and our God without giving us any information. So I would think if you can keep - well, I know you have them here. I don't know how you'd fix that, so you fellows will have to figure that headache out - but I think you need to do that, and I think, you know, with taking responsibility for your own health, I think we need to know what's in the food we're eating and that can only come through people like me coming to you and you people going to the company and saying well, this is a problem.

People could be dying now. You don't know. You could be having illnesses from it now, but you don't know because proper experiments have not been done. So I guess that's kind of in a nutshell where I was coming from.

Wilbur MacDonald (PC) (Chair): Would you take some questions?

Sandra Boswell: Sure.

Wilbur MacDonald (PC) (Chair): Eva?

Eva Rodgeron (PC): As previous presenters have talked about the monarch butterfly . . .

Wilbur MacDonald (PC) (Chair): A little louder, Eva.

Eva Rodgeron (PC): I always thought I was too loud. I'm wondering where you found your information? Do you have any information on hand?

Sandra Boswell: Well, I had great references before my program crashed. Now there's a Dr. John Obycki. You pronounce that however you like. I can't.

Eva Rodgeron (PC): Could you spell that again?

Sandra Boswell: John O-b-y-c-k-i and Laura Hansen, and they're at the Iowa State University.

Eva Rodgeron (PC): Yeah, because this was a question that had come up previous to this.

Sandra Boswell: Oh, did it?

Eva Rodgeron (PC): And the information that . . . research after that presenter was that there were six research studies done by the National Academy of Scientists and their quote was the potential risks of the monarch butterfly population from BT corn pollen is negligible.

Sandra Boswell: Well . . .

Eva Rodgeron (PC): We seem to . . .

Sandra Boswell: It actually will kill off the larvae very quickly, and - let me see now - they had a 20 per cent mortality rate in larvae within 48 hours of one variety of GM maize.

Eva Rodgeron (PC): Okay, and the other question. Your organization - do you work here out of Charlottetown?

Sandra Boswell: Yes. We're local. We've been around for quite a while but you don't see us very often because most of us don't have a lot of mobility in terms of going places and a few were going to come along today, but one had to go to a doctor in Halifax and the other one had to go somewhere else, so I just couldn't - I had to get here, so I couldn't wait.

Eva Rodgeron (PC): Yes, because I noticed that the name of your group -

Sandra Boswell: The Allergy and Environmental Illness Group.

Eva Rodgeron (PC): Is it just strictly in relation to GMO products or is it other products or other allergies that might arise?

Sandra Boswell: Well, of course it's a lot of other products and lifestyle as well. But you don't know about the GMO foods because you haven't got any clinical trials or you haven't got any experiments to go by because for some reason, our governments - and governments all over the world - have not held these people accountable. You'd hold me accountable if I were going to grow something or I had a cow that was sick or whatever, I'd be held

accountable. I mean, why aren't you people holding these people accountable? Everything has to start somewhere and why can't it start with you guys, and you just say we want the information - demand it.

Eva Rodgeron (PC): Okay. Thank you.

Wilbur MacDonald (PC) (Chair): Ron?

Ron MacKinley (L): Well, you would support labeling. You see, right now there's no law, I don't think, for labeling, is there?

Sandra Boswell: There's no law for these people. They seem to be above the law, you know, and governments seem to be welcoming them with open arms. But now I know Germany is not so open to them anymore, England, and quite a few places in Europe, and I believe Japan is another spot. I could always, if I ever, you know, retrieve that document, send it on, but I just think that we're doing our people a great injustice. People come to me and they ask me questions and I feel it's my duty to take the questions and ask them to whoever I can and I can get an answer. So I'm bringing our concerns to you because we deserve to know what we're eating. We need to know what we're eating. We need to know how these things are going to affect our children.

We don't know this because they're everywhere - in milk, breads, margarine. We're feeding this to our kids and, you know, we haven't made these people be responsible enough to give us appropriate experiments. So I think it's our job to do that. I think as politicians, I know you have a lot to do, but I think the people deserve to have some answers, especially in regards to health.

Ron MacKinley (L): Well, if you look at your soap you're talking about, somebody got an allergic reaction to soap because it wasn't labeled, so they had to go to the company to find out. So what you're suggesting - and I can see it, too - is that GMO products, if they're available, should be labeled and also other products should be labeled and then if somebody with an allergy, which you have people with allergies, went into a store and they picked up soap and they changed the ingredients on the soap, well, then you'd have an allergic reaction. Like some people, my father was allergic to bee stings. I'm not, but he was.

Sandra Boswell: Yes.

Ron MacKinley (L): And he only had a certain time to be able to . . . he carried the medicine with him, especially in the summer at the haying because he'd just swell up from bee stings.

Sandra Boswell: Yes.

Ron MacKinley (L): So there's all kinds of allergies out there that people are allergic to, yet you're buying it and you don't know what you're getting.

Sandra Boswell: You have no idea. And what I thought of was - since it's not on the label - it's a very popular, popular product. Think of all the people that would be taking showers and maybe rushing their child off to emergency in a life-threatening situation because they were severely allergic to nuts and it wasn't even on the label. So I would be more than happy to help anyone out that was willing to work on this to make these people more accountable. And if I have a day job, I would do it at night, but I really think we ought to try to keep them out of here if we can because I think it's going to make your product worth a lot more money.

Wilbur MacDonald (PC) (Chair): Fred?

Fred McCardle (PC): Well, I just want to comment that they have discovered the gene that causes the allergy in peanuts and the power of bio-science will soon have peanuts that won't cause allergies anyway.

Sandra Boswell: Well, yeah, but when are you going to get that on the market and will it be on the box?

Ron MacKinley (L): Will it be on the box? No good if allergic to peanuts. Some reason to know what you're eating, if there's peanuts in it or no peanuts.

Sandra Boswell: You need to know, and you could have more than one gene, actually, in a product as well. It depends on what they want to do with it, but the fact that we have BT in our corn that our kids are eating. I don't eat it because I have an allergy to corn, but for those that are, it's a whole process that we really need to look at more carefully. And I think it'll make us worth

more money as an agricultural province. I really do. I buy beef from a natural farmer that grows naturally because I don't have to deal with hormones in the feed and all of that, so it's worth more money to me to buy that.

Ron MacKinley (L): Potential market there.

Sandra Boswell: Yes. Thank you. That's all.

Wilbur MacDonald (PC) (Chair): Well, thank you very much, Sandra, for coming today. We appreciate you coming.

APPLAUSE

Wilbur MacDonald (PC) Chair I guess we did conduct our business.

Richard Brown (L): Move for adjournment.

Wilbur MacDonald (PC) Chair : We're going to try and get a full day. We have two more Wednesdays and if we can get another day in there, we'll do that, okay? All those in favour say aye.

Committee Members: Aye!

Wilbur MacDonald (PC) (Chair): The meeting is adjourned.