

# GMO: Label or Not?

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**Greg Dalton:** Welcome to Climate One, a conversation about America's energy, economy, and environment. I'm Greg Dalton.

Today, we're discussing a proposition of the upcoming California ballot to label genetically-engineered food. Genetically-modified organisms or GMOs were introduced to the United States food system in the mid-1990s, and now, an estimated 70% of packaged food sold in this country contains some genetically-altered ingredients. Proposition 37 will require food sold in California to carry a label if it contains just under 1% of GMO. Supporters say consumers have a right to know what's in their food, and that GMOs have not been adequately tested. Opponents say tests have proven GMOs to be safe, and labeling will drive up the food prices.

Over the next hour, we'll sink our teeth into GMOs with our audience at the Commonwealth Club and two guests on each side of the debate. Jesus Arredondo is principal and founder of Advantage Government Consulting in Sacramento. Kent Bradford is director of the Seed Biotechnology Center at UC Davis. Ken Cook is president of the Environmental Working Group, an advocacy organization based in Washington, DC. And Jessica Lundberg is with Lundberg Family Farms, which grows rice up near Chico. Please welcome them to Climate One.

[Applause]

All right.

Ken Cook, why do you support Proposition 37?

**Ken Cook:** Well, for a number of reasons - let me start with the fact that I'm a California voter. I've moved here just over a year ago, and I have a four-year-old boy. And my learning, since I've been here, has been that the future of food is in California. And that future, critically, requires a right to know - transparency.

Proposition 37 is premised on that very principle - that with the uncertainty that, I think, is out there about genetically-engineered food, I do believe that we should have had, from the very beginning, government mandated health and safety studies; we do not. I do believe that we should have been much more rigorous in looking at what the downsides might be for the environment. We now have abundant evidence that there are major downsides to the introduction of these - these crops and the technologies that go with them which mostly are pesticides.

These - the GMOs - the genetically-engineered ingredients on the market come to us mostly now from pesticide companies. And, from my standpoint, there are uncertainties about the health and safety of genetically-engineered ingredients, and while those uncertainties are out there, while the scientific debate proceeds, and we hope it will be rigorous, the American Medical Association has called for long-term health and safety studies in a break from their past position recently. Until that we have more resolution there, it's the least we can do. It is to give people the right to know - let them look at the label, and that's what this proposition would do. If it's whole food that's genetically-engineered, it will say genetically-engineered, if it's a fruit or a vegetable. If it's a processed ingredient somewhere on the label, and these labels change all the time, it will have to

indicate that there are genetically-engineered ingredients in it. It's very straightforward. And in California, we value those rights and have come to learn you've been leading the nation for a long time in asserting those rights in the public interest. This is the right we need now for our food.

**Greg Dalton:** Kent Bradford, why are you opposed to Proposition 37?

**Kent Bradford:** The primary reason I'm opposed to it is that, contrary to what we just heard, there really is no scientific evidence that they're harmful at all, or that there's any danger to them whatsoever. In fact, just today, the American Association for the Advancement of Science - the biggest organization of scientists in the world - came out and reiterated that there's no scientific reason to specially label these crops or to be concerned about their safety simply because they're genetically-engineered.

The main problem with the - one of the main problems with the Labeling Initiative 37 is that it is labeling for an entire technology and, in fact, says that you will not label for the actual ingredient in the food. So, in fact, we're losing a very broad stroke. We're labeling all foods that might have used genetic engineering. The American Medical Association, just in June this year, very clearly said, "There is no scientific justification for labeling of bioengineered foods."

So, I could go on about scientific organizations. Every reputable scientific organization has concluded that there really is none. The products on the market that had been used - produced using genetic engineering have all been through FDA review. It's true, as I stated, it's not mandated. It's not mandated for any whole food in the U.S. All of the reviews of whole foods by the FDA are voluntary. Every genetically-engineered food in the market today has been through the FDA review. So, in fact, there is - no worries there.

So, overall, as a scientist, my view is that we need these tools. Contrary to what you just heard, the use of genetic engineering is reducing pesticide use - particularly insecticide use has gone down dramatically. It has shifted the use of other crop/agricultural chemicals like herbicides to much, much safer chemicals than were used previously, so it has replaced other chemicals that were worst. And so, the overall environmental impact quotient has gone down by about 18% due to the use of these crops.

So, I really don't feel like we need to add a stigmatizing label to these foods when, in fact, they are doing beneficial - they're beneficial for us in the environment. There's absolutely no evidence that there's a health problem, and the label itself would be so vague then, in fact, it would be really virtually useless as an actual - we can come back to this later - be actually useless to the consumer other than just to label virtually every processed food in the market.

So, those are some of the reasons that I don't think you should vote for it.

**Greg Dalton:** Jessica Lundberg, the - Kent Bradford mentioned reduced pesticide use. And in fact, the National Academy of Sciences cited the improved water quality and reduced use of pesticides as a reason - as a benefit of genetically-modified organism. So, I'd like to get you, as an organic farmer, in on that whether in fact there's less pesticides, it could - GMOs could improve water quality.

**Jessica Lundberg:** That's an interesting statement, because the research that we've been seeing is that there's over 500 million pounds more pesticide as being used since the introduction of these genetically-engineered crops. And these pesticides have to go somewhere. They're going into - the soil, the air and the water. And, as Kent had mentioned, the vast majority of the crops that are being engineered are for herbicide tolerance or they're actually being engineered to be pesticides

themselves - to be toxic to insects. So, that's - it's quite an interesting point of view that we were promised the technology that would reduce the amount of chemicals being used, and actually, we have seen the increase in chemicals, just like we are promised the technology that would increase yields for farmers and have health benefits for consumers, and we have not seen an increase in yields, and we have not seen any health benefits for consumers.

**Greg Dalton:** Is that because there's a tolerance that's developed, so you have to use more. I mean, why is that you're saying there's more pesticide used? That there's pesticide-resistant crop?

**Jessica Lundberg:** They are seeing in the areas where they're using these herbicide-resistant crops, that it's - it won't - you knew it would happen - that the more you use a chemical the more the weed species adapt. And so, as the weed species adapt, you have to use more chemicals. And this, in some areas, has meant more applications of the chemicals. It's also meant more chemicals of different spectrums - different types of chemicals to address the weeds that aren't addressed with the chemical that the plant is engineered to withstand. So, it's been both.

Will GMO Labeling Benefit Organic Food Producers and Raise Consumer Costs?

**Greg Dalton:** Okay. Jesus Arredondo, let's get you in here on terms on why you're opposed to 37.

**Jesus Arredondo:** Thank you very much and thank you for having us. It's a very important debate - a very important discussion. The principle concerns that I have - I spend most of my time on regulation, and I think the approach to better information and providing more information to a society - it's a noble goal; it's a noble start. Unfortunately, the way that this proposition is drafted is very poor and will result in enormous confusion, and it's going to increase cost for our foods. The unfortunate reality here is that you have a proposition that is so poorly worded that we were - we are going to wind up in litigation on Day 1 if this thing passes. I would say, "Vote No." there's a better approach...

**Greg Dalton:** Litigation by - by which side? Of the losing side, probably, whoever wins or loses, right?

**Jesus Arredondo:** Fair enough. The reality though is that on the winning side, if it's - let's say that it succeeds, you're going to - we're going to get litigation anyway from the very lawyers who drafted this proposition.

They have done it, and in other cases, they were very instrumental in drafting Proposition 65 in California that's resulted in a direct benefit to those who drafted the proposition. In no case have we seen that there's any benefits to the populace - to the people that we're supposed to be protecting.

And so if it's true that the interest is noble, then let's make sure that we do it right. Let's not rush in this instance. Let's make sure that we do it from the perspective of being a little bit more traditional in the way that we're approaching the drafting of the proposition, so that we don't wind up costing consumers unnecessarily.

**Greg Dalton:** So, you're saying that organic food companies are pushing this, because they're going to make more money.

**Jesus Arredondo:** Yeah.

**Greg Dalton:** Is that what you're saying?

**Jesus Arredondo:** I think they will.

**Greg Dalton:** Jessica Lundberg?

**Jessica Lundberg:** Could I address that? Yes. I would like to address that. For one, you said that lawyers have drafted this, but actually, lawyers haven't. This proposition was drafted by a coalition across food, food health, or excuse me, food safety, public health, farmers, and concerned citizens, because - I know that because I was a part of that as a farmer. So this has been something that has been put together with a very keen interest for what will benefit the public, what will not be an addition to cost, and provide as little regulatory oversight as possible.

So, I don't agree with you on that as far as it being drafted by the trial lawyers, and especially on the point of it being drafted by the same people that drafted Proposition 65. I understand the intention of Proposition 65 was also positive for our - the California consumers as far as protecting them, but learning from what happened with Proposition 65, Proposition 37 was put in place so that it would not reward lawyers for head hunting. There is a public provision, so that any consumer can draw a suit against the company if they feel that a product is not labeled as it should be labeled. But once a company shows an affidavit that it does not contain genetic engineering, the suit is dropped; it's over. And if an attorney does help a consumer in drawing up a lawsuit, there are no additional fees that are paid to them for doing that. So, that's something that I feel is misleading to say.

**Greg Dalton:** Will organic companies benefit from 37?

**Jessica Lundberg:** Well, that's an interesting point, too, because if you think about it, organic foods are the only foods right now currently on the market that actually have a regulation that they cannot be produced using genetically-engineered seeds or products. So, actually, isn't that counter intuitive though - that right now, when a consumer looks for a product that doesn't have genetic engineering, organic foods is the only one that provides that, and yet what this ballot initiative aims to do is to provide more direction to the consumers that actually would provide competition for organic foods, if that's what the consumer is looking for, because it suddenly makes our market much wider for choice for people to be able to go out and see across the broad spectrum of products where they can find foods without genetic engineering if that's what they're choosing to purchase.

**Greg Dalton:** So it can actually be harmful and more of a competition for organic food providers. Let's talk about costs. One of their claims is that this will drive up food costs. There's a lot of numbers out there. I saw one that was in the agbioforum from 2007 that said, "Ranges between \$1 to \$10 per person in industrialized countries." How is this going to affect cost - Proposition 37? Who would like to tackle that? Jesus? And Ken?

**Jesus Arredondo:** Well, I - number 1 - the studies that we have looked at suggest that the impact to an average family is going to be between \$350 and \$400 a year. Now...

**Greg Dalton:** And where's that number come from? What's that based on?

**Jesus Arredondo:** Right. That's based on - if I'm a producer, and I don't want to have a label on my product, I'm going to reconstitute - have to reconstitute my food and my product, and I'm going to aggregate cost to that product. I'm going to pass that on to the consumer. So, if you're already shopping at Whole Foods, \$400 might be nothing to you. But if you're shopping at Super Wal-Mart, that's a big impact; \$400 is a big impact to every family. So, there is a real cost. Moreover, the Legislative Analyst Office in the State of California, which is an independent part of the government, did a study, and they said, "To regulate this, it's going to cost a tremendous amount of money." Now, there are some that have said, "No. No. No. It's not gonna cost a lot of money." When was

the last time that a government program was cheap? Ask yourself that question.

**Greg Dalton:** Ken Cook?

Will Labeling Drive GMOs from Supermarket Shelves?

**Ken Cook:** Well, I mean, look, I just think I have to face the facts here. There - labeling is required in over 50 countries around the world, and you don't have to take my word for it. Just Google Kellogg's in England or Nestle in Germany - they're selling the same products over there that they sell here, and that they would be selling in California, except they're required to label genetically-engineered food; that's point 1. And there's been no cost increase since that they've reported whatsoever, because the companies have responded. You brag about how dynamic the food industry is and how dynamic farmers are - they'll be dynamic enough to deal with this, and the study you're referencing, I believe, was paid for by the pesticide companies and the food companies that are opposing 37. They paid for it in Oregon, and it was used back down here.

My other point would be, and I'm always surprised to hear this argument made by - particularly with you Kent - that there would be no value to consumers from labeling when your work, which I believe, would be publicly funded, has shown how valuable labeling can be for farmers, food companies, and pesticide companies where genetically-engineered crops are involved. You call it identity preservation. You wrote a beautiful paper in it and the word 'labeling' appears throughout there.

And here's what it says - let me tell you what that means - if a pesticide company genetically engineers a crop, a seed, they want to sell it for the maximum value, and sometimes, that means they have to sell it to a farmer, who will be able to sell that trait on a market place. Some of these traits have to do, for example, with making a special kind of corn that is ideally suited for making ethanol. Food companies don't like that corn. They don't want it. And, the farmers, in order to take advantage of having spent more money on that seed, they have to demonstrate, document, that they have brought that kind of seed to the grain elevator. And the chemical companies that invented this seed want to be able to sell it to the farmers at a higher price which means it goes right through the system.

So, what it seems to me, Kent, is something like this - we have a law in California that rice farmers lobbied through to make sure that genetically-engineered crops of rice, if they're ever grown here, will be strictly labeled and tracked. And my feeling is, when I read your work, Kent, and I see the distinction between giving consumers the right to know where they simply feel that they have that right, and this is America - the consumer's always right - versus your view that it's okay and, in fact, necessary to label when it benefits the pesticide companies. We want labels then going through the food chain. We want labels when - for the farmer - when he takes it to the elevator or to the processing source. And we want to make sure that the food companies don't lose money when a mislabeled product gets into our food that they don't want. So, is it not the case that you're in favor of labeling when it helps everybody in the food chain except consumers?

**Kent Bradford:** No. It's not the case. Can I respond?

**Greg Dalton:** Kent Bradford -- yes.

**Kent Bradford:** Yes. I appreciate that you have affirmed that I am an expert on identity preservation in agriculture, because I want to first get back to the cost issue and tell you where the costs come from. The studies that had been supported by the Yes on 37 program suggested it's actually trivial. It's just changing a label, and labels change all the time. What's the big deal? Just

add it to the label.

The problem is that, as Jessica said, is that if someone challenges that, and it says, "Well, you, this ought to be labeled." Okay. You're just supposed to produce an affidavit. The grocery store says, "Well, I have an affidavit, and this just says where that came from." Well, what is that? And that person has to know - the person that sold it to them has to know where that came from. And the person who sold it to them has to know where that came from. And this stretches all the way back to the farmer. So, we're going to have an enormous bookkeeping system that will be imposed upon the entire manufacturing - food manufacturing industry, because it's mainly - there's so many exemptions in the rule, it is mainly going to be processed foods, mainly foods that are going to be captured that now, this poor grocer, at the end, is going to be sued by these lawsuits. And because they can't produce an affidavit, and even if they do, you know that the lawyers will encroach on everyone. In other words it will just pass on back down the way.

I think it's also very important to have a distinction between branding and labeling. Branding is what you're talking about. You're talking about identity-preserved products, and that's what we have. We have identity-preserved products that say GM-free, for example. We have identity-preserved products that channel different products. Generally, people who want to have those pay a premium for them. Usually, there's a premium for GMO-free, not organic, but there's an even bigger premium for that.

In other words, it costs money to do that channel. It costs a lot of money to do that channeling, and that's why it's preserved for places where it's really needed. That is where the product is very special, and it needs certain properties. Okay. That's worth the effort to do that.

Now, we're talking about commodity. We're talking about just corn oil, soybean oil, and starch - things that go into thousands - tens of thousands, actually. We have 40,000 products in the supermarket, and that means those manufacturers will have to follow the entire supply chain of every one of those ingredients. They've got to make a cake mix and put it on a shelf. They're going to have to know the entire supply chain of every one of those ingredients all the way back to the farmer.

Now, that has to raise cost. And this is where the costs come. I mean, I've seen that the Proposition 37 study that was supported by them that says, "Oh, it's just a matter of changing labels." So, this is, you know, it's too naive - I don't know if it's even clear that that's where the cost will back is back to try to have an identity-preserved system.

If you think - you go into a store, and you look for that special label, that organic label, that GM label - it's higher cost. Now, you're saying, "Oh, but it won't cost if you want to do this [cross talk] entire scope. I mean, why is that?"

**Ken Cook:** But not anywhere else in the world. Why is it? Why can they do it in China? Why can they do it in France? In Italy? In everywhere else?

**Kent Bradford:** You know I was in France. I was in France, and I was in The Netherlands. I was in Europe for a month this summer. You do not see a single product on the market in a grocery store in Europe with that label.

**Ken Cook:** Yeah. Because the companies switched out.

**Kent Bradford:** No. Because if you're...

**Ken Cook:** You provided the food at no extra cost.

**Kent Bradford:** No. Because they really -- I mean I hate to say it, but in Europe, when they try to initiate those labels, they put labels on the things in the food, there were pickets and boycotts out on the streets. So I don't...

**Ken Cook:** Consumers make decisions. I hate that.

**Kent Bradford:** Well, consumers made decisions but they made a decision; they have no choice. Your consumers in Europe have no choice, because there are no GE foods in those supermarkets. Now, if that's your goal, okay.

[Applause]

**Kent Bradford:** I'm happy for that.

**Ken Cook:** Well, but there is food. There's food in the supermarket.

**Greg Dalton:** Ken and Kent Bradford, that was a market response, right?

**Kent Bradford:** That's a market response, but I think - I don't think we have a completely, you know, a random audience here as you pointed out that it's okay...

**Ken Cook:** You're not talking about the applause. You're talking about what happened in Europe. [crosstalk] talking about [crosstalk] not this market.

**Kent Bradford:** I mean if people do not - if people can afford to - if people can afford to already buy higher priced food, and so it's not a problem. But, you know we've got - we had a severe - we got drought in the Midwest this summer, and it cost grain prices to go up. It's made grain prices go up around the world, because those markets are interlinked. Every time prices go up, it's not a problem for us - a few more cents. I mean the amount of cost in a box of corn flakes is trivial. It really doesn't affect the consumer at all.

**Ken Cook:** Good point. You've got a good point.

**Kent Bradford:** However, around the world, people who rely can barely afford food for themselves. Those increases in price raise the poverty level, the malnutrition level, the food insecurity level immediately.

**Ken Cook:** Well, Kent, why wouldn't we stop.

**Kent Bradford:** So you were - we have technologies that will help this to keep costs lower.

**Ken Cook:** Why wouldn't we stop exporting or using 40% of our corn for ethanol, if we're so worried about those poor people? Really?

[Applause]

**Ken Cook:** If you're so worried about them, join me in lobbying the ethanol lobby and the industry to say we should not be devoting 40% of our corn crop to put into our SUV.

**Kent Bradford:** Say - I'm - oh, if you want to do that, go lobby that. Why put a label on our food that's going to cost us all a lot of money to indirectly try to achieve that goal. If you really don't like that, go and challenge the energy [crosstalk] go and challenge the energy law.

**Ken Cook:** [Inaudible] says [crosstalk] we [crosstalk]...

**Greg Dalton:** All right. Guys, Ken Cook is president of the Environmental Working Group and his sparring partner is Kent Bradford, director of the Seed Biotechnology Center, UC Davis. Jessica Lundberg, let's get you in here. You're a farmer yourself. Respond on - what...

**Jessica Lundberg:** Yeah. Thank you very much. So, back to the original comments made by Jesus on Proposition 37 - there is a major assumption that you made there that I think is something that's not included in Proposition 37. And so your information is faulty. It's that this is a labeling law.

This is not a ban. This is not requiring food companies to change their ingredients or to reformulate their products. If they choose to do that, it's in response to consumers.

And that's one thing that we feel, as farmers, see we have - me - Lundberg Family Farms, my family has started a rice mill. We sell consumer products with our name on it. We encourage consumers to tell us what they want. So we've had this relationship for a while. We understand what our consumers want. And because of that, when we go out to make changes, we can make it in response to a market place. The owners of this technology have never had that conversation with the consumer. They've never asked them "Do you want to buy this?" because they've never told the consumer what the benefit is supposed to be.

So, when you make the comment about this is going to cost each family in California \$300 to \$400 more, no it's not. That's based on your presupposition that the companies are going to immediately have to reformulate. Well, what an interesting idea that you would immediately assume that people don't want that. But, because as a food company, we change labels all the time. And it's not something just to throw out there as if it's flippant. It's not.

Packaging costs are a budgeted expense. And if we change our package labels, we don't pass those on to the consumers. So, when we talk about Proposition 37 as being a very straightforward clear labeling initiative, it means put the label on.

And to Kent's point of, again reformulation, the complexity of the food system - farmers will deliver what the market demands. Farmers are extremely resilient. And to your point about the drought resistant corn, why would you not label that and tell people what the benefit is to the market place? You are also assuming that putting in a label that says genetically-engineered means people will go away from that. Why not have that communication? People are so disconnected from their food. Why not let them understand the challenges to farmers? Why not let them know how their food is being produced?

So, to me, it's an open conversation with consumers. It's creating transparency. It doesn't add cost to the system. It doesn't require reformulation.

And the other thing that you mentioned about the supermarkets and the grocers and all of the lawsuits that would be brought - no, because if the company that's making the food - and I understand how the food system works too, and I know it is complicated, but it's also set up for food safety. And we have a system of tracking and tracing in this country that has given us very safe food when we follow the laws that are set out. And if we have contamination, we are able to follow it actually to the farmers, and so it's already a complex system. And this initiative can work easily within our system.

**Greg Dalton:** Jessica Lundberg is with Lundberg Family Farms. Let's have Jesus Arredondo.

**Jesus Arredondo:** This initiative will make the process of tracking that much more difficult. It is just laced with loopholes for how - I mean I would have to hire a lawyer. And we farm in Northern California as well. We grew alfalfa for Harris Ranch for some time. Here's the thing. In order to



understand how I would have to label my food out, I'd have to hire a lawyer. Now, tell me that that's not going to add cost. That's a disingenuous saying. When the California Civil Justice Association says, "Hey, this is gonna be very costly." And when the NAACP says - warrants everyone and says, "Vote No, because this is gonna be a problem." There's an issue here. We should be listening to that.

**Jessica Lundberg:** Can I?

**Jesus Arredondo:** This is going to hurt families.

**Jessica Lundberg:** Can I respond to the farmer?

**Greg Dalton:** Jessica Lundberg.

**Jessica Lundberg:** Just very simple, I can make it fairly quick. This proposition was written based on intent. If your family growing alfalfa now in California...

**Jesus Arredondo:** The intent, unfortunately, that's not what's going to happen.

**Jessica Lundberg:** But you mentioned your family grows alfalfa. If you were growing it...

**Jesus Arredondo:** It's a good - but let's say the intent was right. I know it's - I'll grant you that. Now, in practice, your implementation is going to be terrible for the rest of us.

**Jessica Lundberg:** It means your intent as a farmer...

**Jesus Arredondo:** When lawsuits happen, I will not benefit. You will not benefit. Lawyers will benefit. This is not pro-people. This is pro-lawyers.

**Ken Cook:** I think, technically people are lawyers - lawyers are people. I think, technically, at least.

**Greg Dalton:** Jessica Lundberg, you're out there.

**Ken Cook:** Can someone check that for me out there?

**Greg Dalton:** We're talking about Proposition 37 at Climate One.

**Ken Cook:** And I want just - if I just...

**Greg Dalton:** Hang on, Ken Cook, well, Jessica got cut off there.

**Jessica Lundberg:** Yeah. The only I was going to say was very simple. The proposition's based on intent. The idea that both Kent and Jesus have made is that if the food company intends to have a product that does not have genetic engineering, then they will make contracts with farmers to not grow crops that have been planted with seeds that have genetic engineering. That's what the intent means. If you don't intend that, and then you won't ask for that, and so, then put the label on it, very simple.

**Greg Dalton:** Let's talk about transparency. It has come up here. We live in a world where consumers expect to know what's in their iPads, where they're made, what the calories on menus now are disclosed. Are we living in a world of increased expectations of transparency particularly among young people? There's no privacy anymore. So I'd like to have Kent or Jesus talk about the expectations of transparency. What's wrong with disclosure, because it seems to be expected in lots

of places now? Kent Bradford?

**Kent Bradford:** We'll I'll give Jessica her point that many people offer things to consumers - that is farmers; the whole food system is a price taker. That it offers things to consumers, and they take it. If, in fact, this label were simply that, and everyone understood what went into it if they understood the way I do. How it was made, what the changes that were made were, what the benefits to the environment are, as I can document - in fact, I will come back, when in fact total pesticide use has gone down. The environmental impact has gone down. We need these products - this possibility even more in the future. Those products are first wave and we're going to be having much more severe things to deal with drought, salinity, high temperatures, climate change [crosstalk]

**Greg Dalton:** Climate driven, yeah.

**Kent Bradford:** Well, let me just say why - to respond to your comment - why then don't companies be transparent and just put the label on it. I think all you have to do is look at the very first television ad that was run by Proposition 37 - the Pro 37, which, I'm not going to repeat their claims, because I don't want to give them credence, but they immediately tried to make consumers scared about genetically-engineered food. That is it's a scare tactic. If you look at what they're putting on those ads, it's not about you're right to know. It's about be very scared about your food, be very scared. That's why - this is why the manufacturers don't want to put these labels. It's not that they're not proud of their products. It's not that they wouldn't do it. It's because there are active groups constantly, every day, trying to make people believe that it's dangerous, that it's scary, and I think if you were - here's the difference, again, between a label - a mandated label that we - is misbranded if it's not there and a brand. That is if you want to label your food as, you know, non-GMO; you want to label it as sweeter than somebody else's, whatever; that's a brand.

What we have here is a mandated - government-mandated label that requires you to have speech. In fact, it will probably be challenged. You mentioned the lawsuits. It will be challenged on the fact that it's mandating speech from these companies who lose their right of free speech, basically. It's mandating them to put something on their label. You think it's funny, but the lawyers will tell you you're mandating when you put something on there that is not really what they agreed to.

And, again, the FDA has already decided - there is no material change in those foods in the market so far. So, we're going to have the FDA. I prefer, myself, the FDA base it's labeling on science. I do not think the FDA and well, it will go to the FDA - do not think that California, itself, should be mandating labels that are not science-based, but are rather market-based. If we allow the government to get in to putting labels, that they're going to be shifting consumer purchases one way or another, I don't think that's the way we should go. I think food labels should remain about the science, about the content of the food.

Let me just give you an example. Many people have allergies to peanuts. And that we do have labels on there and are very appropriately sold.

**Ken Cook:** Fought heavily by industry. Fought heavily by industry.

**Kent Bradford:** They're all over. They're all over peanuts. Now, let me ask you this. What will happen with Proposition 37 is that most - well, one likely scenario is that it will be very, very difficult for them to segregate, purchase, do all of these things. There is the option to put, "May contain genetically-engineered," "May contain genetically-engineered food." Now, it seems to me the most logical thing for a company to do would be to put that on virtually everything that they sell, because that will protect them from the lawsuits. It will be labeled. It may be misleading. How is that going to help you as a consumer?

**Kent Bradford:** Everything in the market just says, “May contain...” In other words, you’ve gained nothing out of that label. That’s why I said earlier you said, “Why will I not gain?” Let me just explain and that was it. That it says, “May contain...” as an out, because it is very difficult trace all these. If companies decide to do that, we gain nothing. We’ve gone through this entire thing, huge bureaucracy, all the way back to the farmer, and the consumer will gain no new information whatsoever.

**Greg Dalton:** Kent Bradford is director of Seed Biotechnology Center at UC Davis. Other guests today at the Commonwealth Club are Jesus Arredondo, principal and founder of Advantage Government Consulting; Ken Cook with Environmental Working Group; and Jessica Lundberg from Lundberg Family Farms. I’m Greg Dalton. We’re discussing Proposition 37 on the upcoming ballot.

I’d like to quote a *Scientific American* editorial from the editors in 2009 who said, “It is impossible to verify that genetically-modified crops perform as advertised. That is because agri-tech companies have given themselves veto power over the work of independent researchers.” They went on to say, “Ag companies should immediately remove their restriction on research from their end-user agreement.”

So, I’d like to have Kent Bradford respond to that.

**Kent Bradford:** They did. That’s an old quote – 2007.

**Greg Dalton:** 2009.

**Kent Bradford:** 2009, there was a discussion about that. There was debates about whether in fact independent scientists could plant those varieties and use them in tests. It created a big controversy, but the industry, this – the academic scientists – they all came together and basically that’s – I’m sorry to say it, but that’s old news. That is there is no restriction on that. Public scientists can do studies on these foods and so on. So, you know, it’s raised as an issue but it’s taken care of.

**Greg Dalton:** Ken Cook?

**Ken Cook:** Well, it’s been taken care of, because we forced them to take care of it. Look, you’ve enjoyed that and fought it for the – right up through the very end, and they’re still – you still have to get agreement from the companies. You still have to sign a licensing agreement if you want to get it. In Europe, they’re suing these companies to get access to the raw material.

**Kent Bradford:** They’re suing, do they not?

**Ken Cook:** But I just want to say on the whole question of transparency, when you look at California’s food system, some of the most exciting developments in food have come from this state. Some of the most important companies are based here.

Now, we had a discussion earlier today with some of the leaders in the Natural and Organic Food Space. You probably have never heard of UNFI; maybe you haven’t. But they’re going to do \$6 billion worth of sales here. They are the largest independent distributor – wholesale distributor – of natural and organic food in the country. And the head – the founder of that who started off loading vegetables on to trucks here in California and built it into a \$6 billion industry that leads the world and is cleaning the clocks, by the way, of the conventional companies that are against 37, cleaning their clocks in the market place.

He, and the representative from whole foods, representative from a 6-store chain in Southern

California - Annie's - these great brands based here in California - they made it very clear that they would never support Proposition 37 if the outrageous things that the other side is saying about its cost and the avalanche of lawsuits were true. The only lawsuits we've heard threatened tonight are the lawsuits, Jesus, you mentioned that were - are going to happen if this thing wins. And it's going to win.

**Greg Dalton:** Jesus Arredondo?

**Jesus Arredondo:** Hear me now, believe me later, I guess, is what I can say. Those lawsuits are going to happen, and costs will go up, unfortunately. You know one thing that I find curious about the proposition the way that it's drafted is that it excludes a number of food groups from labeling. Why do we exclude alcohol? If we're really interested in those labels, why do we exclude milk? Why do we exclude cheeses? What happened? We need...

**Greg Dalton:** And the meat and dairy exemption is a big part of this. Why...

**Ken Cook:** The prepared foods also, right? You can't - restaurant food will be treated differently. We need to - I want to take you all to dinner. We need to get you out more, because if you go to a restaurant now, you don't get nutrition labels. And what was done with Proposition 37 was simply to follow the conventions we have for labeling and the rest of the food supply. When it comes to meat and dairy, if it's genetically-engineered meat and genetically-engineered dairy as opposed to the food that goes into it, it would require labeling. But we don't require - the example that's given, we'd have to label dog food, but we wouldn't have to label meat. That's one of the big talking points in the ad. That's blanketing the airwaves from these pesticide companies and big food companies. Well, why is that the case? It's because of the filler in the dog food - that's soybeans, soy oil, corn, and so forth that would be genetically-engineered. So, in principle, that would be one distinction, whereas the meat, if it's not itself genetically-engineered - now, I know you all have that in works - genetically-engineered salmon, bringing a gene from another species in so it grows faster. I know this is in the pipeline. There's lots of foods in the pipeline from these pesticide companies and other biotech firms, and they are planning to introduce more and more of them with the same, I think, inadequate safety regime we have now.

And just to point this out - look, the Food and Drug Administration, we understand that they are the body that basically allows the companies to submit, as they see fit, whatever health and safety testing they decide to submit. It's not required. But we hear, week after week, it seems, of instances where the Food and Drug Administration gets it really wrong in cases where they have huge amounts of animal testing data. And they've even tested things on people. And that's a category we call drugs where time after time we read about drugs that have gone through this rigorous health and safety testing, and FDA still makes mistakes.

So when that's the case, when that can happen, it seems the least we can do is give people a label.

And if the consumer decides they want to eat food that's got genetically-engineered ingredients in it, so be it. If they decide that they want to try and avoid that, because they're concerned that maybe we missed something like we did at every environmental disaster practically in history. Like we did when Monsanto didn't tell us about PCVs polluting their neighbors, or when DuPont didn't tell their neighbors about Teflon ingredients in their tap water. These are the same companies in charge of letting us know if there's a problem in our food. If people knowing that want to have a label, they ought to have it.

**Greg Dalton:** How much testing has actually been done so far? There's some debates - some say not enough. I think, Kent, you said 400 tests have been done. Let's talk about the testing basis. How much testing has been done on GMOs and human food?

**Kent Bradford:** I think Ken just gave you a great example on the strategy that's being used. Do you feel scared about your food? I think that was his intent. I don't have to tell you that. I think it was very clear about [crosstalk]

**Ken Cook:** Scared about the companies who are in charge of it, a little bit. Yeah.

**Kent Bradford:** Okay. There you go. Let me talk about a little bit about those things.

**Ken Cook:** Yeah. Monsanto and DuPont, yeah.

**Kent Bradford:** What's happened with the - these crops are actually so over-regulated and so tested that those are the only companies that can actually go to market. I'm in a public institution. I work for the University of California. You people pay my salary. I have a colleague down the hallway that is developing genetically-engineered plants that will be able to grow in drought, in salinity, with less water. If there anything that we have in this state is a major problem. This is Climate One. It's the topic of your whole thing. If we're really concerned about the environment, we will then able public scientists to do that work to bring those products that will solve those problems for us.

Currently, the regulatory burden to test these foods is so high, the opposition as you heard, immediately if I - we try to produce this, Ken's going to say, "You know that thing might kill somebody someday." Even as - excuse me - even...

**Ken Cook:** Aren't you putting words in my mouth here?

**Kent Bradford:** ...no, you said them yourself. You just, I mean...

**Ken Cook:** [crosstalk] I - did I say that they would kill somebody someday. I don't believe that I said that.

**Kent Bradford:** You used examples very related to that, but okay, I won't put the words in your mouth. Okay.

**Ken Cook:** Well [crosstalk]

**Kent Bradford:** Those are the examples that you're repeating. While the genetic engineering of the future is going to be targeted toward the problems we really have - climate change, high temperature, drought, nitrogen use - these are big, big, big issues. And what you're voting on here is an opportunity to stigmatize an entire technology.

This is like vaccines. What if we said, "Okay, every vaccine" - there's problems in vaccines. Some people get a bad one. We have a horrible thing going on right now with this meningitis thing. It's terrible. It's horrible. But it's an aberration. Should we stop all vaccines because some people are unable to - have an allergic reaction to it or something like 99.9% of the people? How many have had a flu vaccine this year? That's high technology every year following those viruses as they go around the world creating a brand new vaccine for you so that you can be protected.

We need to do this in agriculture. I'm sorry to say that we're facing some very challenging problems from insects, diseases, and particularly climate change. And what you're doing by supporting this is you're putting one more impediment. You're driving the entire thing even more to the companies, and you're making it impossible for the public sector scientists to do that humanitarian - that very important work. So, I'll just say - because it will be a stigma, whether they like it or not - we're telling you that it will drive people away from it that will just make it that much harder for us to use

these technologies.

**Greg Dalton:** How much of the research at those universities as funded by some of the companies that are involved here?

**Ken Cook:** Yeah. Like yours?

**Kent Bradford:** Very, very little. I wish these companies would fund our work at the level that it's claimed. It really - these big companies have - they're huge. They got all the resources they need.

**Greg Dalton:** So, they can't afford to do health and safety testing. They can't [cross talk] to that?

**Kent Bradford:** They have done health and safety testing. They've more - and you know it's kind of interesting...

**Greg Dalton:** They opposed instead of having that role.

**Kent Bradford:** It's kind of interesting because in the public sector, as I say, we would like to get some of these things out, but we just can't afford the cost, because the combination of the green groups driving the regulatory higher and the companies themselves trying to block entry - in other words, the higher bar, the more tests I have to do, the more data I have to submit to the FDA - that just excludes anybody else from playing this game. So, in fact, this continual ratcheting up of this fear factor, the ratcheting up of this regulatory burden, the ratcheting up of the negative scare tactics simply drives that entire thing further and further towards those pesticide companies. In fact, the best thing that we can do...

**Ken Cook:** That's terrible.

**Kent Bradford:** ...is make this completely non-controversial. You might ask the question: why is the organic industry supporting this? Because they don't use GMO already. They don't use GMO already.

**Ken Cook:** So, they're creating a new competitor.

**Kent Bradford:** No. Well, what they are but they use this labeling, this fact that they are GMO-free as a major advertising point. That's one of their major points. If GMs - genetic engineering becomes non-controversial - if it becomes non-controversial - it's as- it's as non-controversial as the other plant-breeding techniques we use which are actually in some case, in fact, even scientists will say those have more potential for unexpected consequences than these, but it hasn't been branded that way. If it becomes non-controversial, there goes a major advertising point for organic. So, there's a major incentive to keep it controversial.

**Greg Dalton:** Kent Bradford is director of the Seed Biotechnology Center at UC Davis. The other guests here discussing Proposition 37 are Jesus Arredondo from Advantage Government Consulting, Ken Cook from the Environmental Working Group, and Jessica Lundberg from Lundberg Family Farms. I'm Greg Dalton. You're just joining us. A podcast of this and other Climate One programs are available for free in the iTunes store.

We're going to pause there, and I have a couple of questions. First of all, if anyone knows the baseball score, please tell us.

What is it?

**Female Speaker:** Zero-zero.

**Greg Dalton:** Still? We're going to put the microphone up here and invite your participation. Again, if you're on this of the audience, please come over to our producer, Sarah, over there where the line will begin. We welcome you to join the conversation with a one-part comment or a question. And if you need help keeping it brief, I'm here for you.

And while we're doing that, I'll also want to take a moment to thank our fantastic crew tonight - Ed and Eva and Adam and Joe and Sarah and Laura and Ricardo back there. I got everybody. So, let's go to our audience questions.

Sir, yes, sir, welcome to Climate One.

**Audience:** Thank you. My name is Stephen Grafting. First of all, let me say, I love Lundberg rice.

**Jessica Lundberg:** Thank you.

**Audience:** One thing that's sort of have been danced around here tonight I haven't heard the whole lot about is the environmental impacts of genetically-processed foods. And I have read recently about one of the most genetically amazing creatures on earth - the monarch butterfly - that manages to migrate from Mexico. And in seven generations or so, when it's in Canada in the fall, a monarch butterfly is born that knows how to fly all the way back to the valley in Mexico that it came - that it's great, great, great, great grandparent came from. They are in - they're population's crashing right now, because of genetically-engineered crops that are allowing higher herbicide use. They're wiping out the milkweed in the country - not competing with the crops - in the country. There's on - about Monsanto wants to introduce an even more herbicide-resistant crop in these areas.

**Greg Dalton:** So, let's get it in the environmental [crosstalk]

**Audience:** So, I'd like to hear you talk about some of that justification for the environmental impact.

**Greg Dalton:** Kent Bradford? Environmental impact?

**Kent Bradford:** Well, the monarch butterfly story traces back to the late 1990s there and about 2000, and it was proposed that actually there could be an impact on the monarch butterflies. The large number of studies were funded, six papers were published, and there are proceedings at the National Academy that, unfortunately, are - were published the same week as the 9/11 problem in New York. So, unfortunately, those never got to press, and there were other things involved in the press, but very thorough studies - the monarch butterfly population fluctuates up and down, mainly depending on whether it freezes in Mexico or not. So, I'm sorry to say, but that entire connection between monarch butterfly populations and genetically-engineered crops has been completely and scientifically debunked.

**Greg Dalton:** One related issue is genetically-engineered salmon. Senator Lisa Murkowski, Republican Senator from Alaska, had a bill on the senate earlier to require comprehensive environmental study before a government approval to get into this food supply. This would be, apparently, the first GE animal for human consumption. That lost in the senate. Is that something that - I'd like to ask, Kent or Jesus, you would support?

**Kent Bradford:** I don't see any problem with that fish myself. I have to say it's a - what they've done is they've created a fish that will grow three times bigger on the same amount of feed in a

shorter time. And now, they've moved it entirely to inland production. That it is not even being asked whether you're growing it anywhere near the ocean. It's going to be completely inland production, so no possibility of escape. It's the same fish. It just grows faster. I mean, I'll be frankly honest. We need to be doing that with crops. We need to be doing that with a lot, because we have to increase productivity per unit area of land, or else we're going to take over more land, and we don't have it. I mean there are severe consequences to not having high productivity, high efficiency.

**Greg Dalton:** And we got to feed 9 billion people by mid-century. Ken Cook?

**Ken Cook:** Well, there's lots of ways we can feed those people, and we know from, you know the - Amartya Sen's Nobel Prize that people don't starve primarily because there's a lack of food; it's because they don't have access to it. They can't buy it. But just to go back, this has been a great exchange - a great question. The biotechnology industry crushed Republican Senator Murkowski's amendment that just asked for an environmental - a more thorough environmental study.

If it's the case, as you've just describe, Kent, that this is no big deal, that ought to be a pretty easy study to do. But since she represents salmon fishermen in Alaska, and she's concerned about this.

And she went to her colleagues on the senate floor, and she asked, "Can we just proceed with a study that's more rigorous than we were going to do otherwise as we're going through the approval process of this?"

And time and again, the industry you're representing up here today - you're standing up for - which is not the public institutions - it's the pesticide companies and the other biotech firms that make this stuff - they have fought time and time again to delimit as much as they can any kind of health and safety studies and overviews. And only when they lose those fights do they - as they did in the case of making some of the material more available to researchers, somewhat more available - only then did they come forward and accept a different regime.

They've spent a lot of money. They're spending 40 - over \$40 million to kill Prop 37 in our state - over 40 million bucks. With advertisements that are making - talk about sloppily written and deceptive labels, these advertisements are the epitome of it. And this is a great example - just do that study, and they just couldn't stand for it. Just do labeling, they can't stand for it. Require health and safety testing at the federal level like we do for pesticides and other things, no. And so that's where I come in. Look, I am not saying, you know, I am not going to feed my kid genetically-engineered food because there are times when I think I'll feel okay doing it. But that's not the point. The point is I want a choice, Kent. I want a choice, Jesus. I want to be able to know...

**Jesus Arredondo:** You already have one.

**Ken Cook:** ...just in case - yeah. But I can't buy organic all the time. He goes out, visits neighbors, goes to school; we don't always have organic. And I'd like to be able to know if I'm feeding this product to my kids and serving it at dinners that I have in my home from time to time, I'd like to be able to make decisions based on what I can read on a label. It's just really that simple.

And the reason California is leading in natural and organic foods, \$30 billion industry nationwide - big companies here creating thousands of jobs - we had billions of dollars' worth of companies on a call today talking about why they support Prop 37 - retailers, wholesalers, farmers, the whole kit and caboodle. The reason they do that is because they know that's the future - that they can make the products that consumers want, they can do it in a way that they do it in other countries, and they can make good money at it.



They wouldn't be putting their neck in the noose if they thought Prop 37 was going to put their companies out of business. Whole Foods - are you kidding? They're leading the industry. UNFI, a \$6 billion company - you think they'd put that on the line after starting off loading fruits and vegetables on a truck? You think they would seriously, I mean, support a Proposition 37 if they thought it was going to put their company out of business through that.

**Greg Dalton:** All right. Let's get our next audience question. Yes, sir. Welcome.

**Audience:** James. I perhaps have a similar question - it's about, maybe the hubris of science - nuclear power, who's claimed it would be safe in [Inaudible], it wasn't. So, what about this - not just as a consumer issue for the health of the consumer that we can track in a relatively short time frame, but what in 10,000 years, 100,000 years what we need to do- is there enough exploration to know, and can we trust a corporation that's looking in a quarterly profit sheet to introduce something that could be around - well, beyond our timeframe?

**Greg Dalton:** Who would like to fill that? Jesus?

**Jesus Arrendondo:** First of all - yeah. Sure. I'd love to. You know our economy is in a bind right now. We can't pay for education. We can't pay for healthcare. We're trying to figure all of these out right now. And this proposition is drafted so poorly that it's going to increase cost. And it's going to increase cost on people who can least afford it. Let's - I don't disagree with you that everyone has a right know. We should know. But we shouldn't take a proposition that's going to force upon the whole population a mandate to label in a scarlet-letter type of approach that's going to raise cost for people who can't afford it. That's the wrong way to do it.

**Greg Dalton:** Kent Bradford? Quickly and we'll follow the next question.

**Kent Bradford:** I'll just say one thing that about it going out and, you know, will it be a hundred thousand years from now? Will it be a problem? Let me tell you. There are - while we're here tonight, a thousand kids will die from malnourishment of vitamin A. Half a million - half a - 500 million kids go blind every year from vitamin A deficiency. Genetic engineering was used to create golden rice that has vitamin A in it. It's being stymied by the same types of arguments that we're hearing up here tonight. That it might - something somewhere might go wrong.

So, I'll leave it to you, people. What's the moral choice here? Should we give that rice - a cup of this rice every day to kids will solve malnutrition, not make them go blind, solve their malnutrition issue? Should we continue to stigmatize this technology, so that people can have the choice between fantastic organic food, fantastic GE-free food, or fantastic conventional food? You make the choice.

**Greg Dalton:** Let's go over to our next audience question. Welcome to Climate One.

**Audience:** Thank you. My name is Connie George, and I just returned from Guatemala. I was on the back roads and very poor villages with very poor families, and we were helping them with their food. Some of them have gardens no bigger than the size of this - where you, guys, are sitting. And they did not want chemicals in their food. They didn't want genetically-modified seeds. They asked to have organic. They had organic composting. They were very proud of this - this is, you know, like individual families, but that's all they wanted.

And what I feel like the American consumer is given is whatever is most efficient. And now we're saying, after the '50s, when all the chemicals came through, that now, we don't want that. So, why is it being forced through big companies that this is the way it has to be when all we want is the

choice?

**Greg Dalton:** Who'd like to field that?

**Ken Cook:** Well, I mean I would look - I think you make a good point. First of all, you know there are other ways to get vitamin A to these kids, and I'm not even saying that in the case of this rice that it should not be put on the market. But I think people ought to know when it is and make a decision about it.

And, look, you know the question you asked about these big companies - DuPont and Monsanto - they've made a lot of chemicals that are no longer on the market. And they're no longer on the market, because when we finally got around to understanding their health and safety impacts, the government had to take action and take them off the market. Those are regulatory systems in place that have that power. Right now, we're not collecting the kind of information that would allow a regulatory agency to really, I think, do an impartial review of health and safety.

And like that's what we're asking for in the long term. But that's not what's on the ballot here in California. What's on the ballot here is - it is really simple, if it's genetically-engineered, it says genetically-engineered. It doesn't say, "Danger: Genetically-engineered." It doesn't say, "Warning: Genetically-engineered." It just says, "Genetically-engineered."

And my view is that there's an education job that needs to be done including by the companies. And you're not doing a very good job of it. If you say that we're being so successful in demonizing food, I haven't noticed that when I look at the waistlines around the country. And I also haven't noticed it when I look at the part of the food sector that's growing so dramatically. And that's where consumers feel that they're voting with their dollars to get what they think is a great healthy product - that's why organic is leading the market place, and natural foods are leading the market place.

So, you know, I really do think it's unfortunate. I would like to see more public research on genetic engineering of crops. I'd like to see more public research into the potential impacts of it. I'm very worried that so much power as you say, and so much money is concentrated in these big companies to the point that they cannot only buy the technology and dictate how it's going to be used. They're coming very close if we don't fight back here in California. They're coming very close to buying our right to know - very close. [Crosstalk]

**Greg Dalton:** Ken Cook is president of the Environmental Working Group. Jessica Lundberg?

**Jessica Lundberg:** I'd go back to the question that Connie asked. Her question was why is it being forced on these countries, and I think it's one of the reason why we have the system we have. It's not an agricultural model; it's a business model. And it's tying the ownership of chemicals and the ownership of seed to a business system. And that is trying to be spread as a business model throughout the world. Because even one of the companies that's supporting the 'No on 37' Nestle, who's based out of Europe - they've put money towards the 'No on 37' and even their sustainability officer out of Europe have said that genetically-engineered foods are not the future of how to feed the world, because we need a more holistic agricultural system.

**Greg Dalton:** Let's get our next audience question. Welcome.

**Audience:** I'm Taddy Crawford. And just to quickly segue after your recent comment. There's a wonderful book written by two Wall Street Journal reporters - two reporters for The Wall Street Journal. It's called "Enough." And it's all about why the local farmers in Ethiopia are having a hard time. There is no market we have gone in. And they recommend setting up like a Chicago Board of

Trade in Ethiopia. It's just - you know if you want to dig a little deeper, there's a lot to learn.

I would like to address the fear factor. Where's the scarlet letter? Where was the advertising? We can't afford to do the advertising. I think our first TV ad's coming out next week.

**Ken Cook:** No, today. On 'Yes on 37'?

**Audience:** Oh is it today? Okay. But it's...

**Ken Cook:** Today or tomorrow.

**Greg Dalton:** So, let me - we have a couple of minutes left, so let's get to the question and we can go to the next...

**Audience:** Okay. Let's go to Michael Taylor. Michael Taylor was the lawyer - consulting lawyer from Monsanto about 10, 15 years ago - slowly setting up this slow process of - first of all, how do you get a patent on something that is a live thing, at the same time claiming is substantially the same as organic food? I hear a little bit of contrast in that statement. But that's the legal basis for which Monsanto has been able to go in. Now, as again, the second time he's been back with the FDA, he's second in charge of safety. You only need to test a food three months. Three months - how long do you think you can get results that might affect reproduction or other diseases? It's not fear; it's common sense.

**Greg Dalton:** Okay. Let's go.

**Audience:** Okay?

**Greg Dalton:** The question there I think is about patenting something that's not different; it's the same as well as the fear factor. Kent Bradford?

**Kent Bradford:** Well, we haven't - we have at least three different systems for intellectual property on plants - companies who put a lot of effort into breeding, whether it's through genetic engineering or not have mechanisms that had been in place since 1930. 1930 on vegetative - propagating things - if you buy a rose, it's a patented rose. If you buy, you know, since 1970, we've had ways to have intellectual property protection on other crops. To just specifically how you can get a patent and yet to still be substantially equivalent is because, you know, I don't want to get technical, but basically, the patent is on the change they made. And the change they made is so tiny, is so miniscule when you come to a nutritional measurement that it's insignificant. And that's what they made their basis on, and I think they're right. That is if we can do something that will improve the environmental profile and reduce the environmental footprint of agriculture and it makes a trivial - absolutely trivial change in nutritional content, I think that's great. And it - why should it be on the label, really, if it's not about the food. Again, the whole thrust of Proposition 37 is to label an entire technology. Let's label all vaccines, because there's a few people, who, you know, have - oh, we still have a very strong opposition group.

[Applause]

**Kent Bradford:** Should we get a, you know, a Proposition 39, and we start, you know, someone say, "I think you need to get rid of all vaccines, because there's - I don't like them." I mean this is [crosstalk]. Let me just make one other comment.

**Ken Cook:** But when I go to my doctor with my four-year-old kid, they tell me what vaccine it is. They tell me. I get to know what the vaccine is. I can make some decisions on my own. And we're

not talking here about banning GMOs; we're talking about labeling them. And when I go to my pediatrician for my four-year-old, I ask questions about the vaccine. And I do my research and try and decide if I want to sequence it a little slower than they may recommend. And then usually, they say that's okay. It gives me a lot more freedom if I have that basic knowledge, and your side of this argument doesn't want to give us this basic knowledge.

**Greg Dalton:** Let's go to our next audience question. We're getting close to the end here talking about California Proposition 37 at the Commonwealth Club. Yes, ma'am. Welcome.

**Audience:** Ronnie Sipi. I have two questions. One is for Ms. Lundberg which is I have been confused whether when something is labeled organic, I thought it referred to how the growing process occurred like the pesticides in this kind of thing. And then I thought it was possible that things like organic corn chips, for instance, might actually be GMO corn, because I know it is almost impossible to get non-GMO corn in this country. So that was one question. And my second question was how is it that Europe is so able to, in most cases, provide a reasonable food supply for themselves that is not GMOed? Thank you.

**Greg Dalton:** Brief answers, we're getting close to the end. Please answer, Jessica.

**Jessica Lundberg:** Okay. The question on GMOs and organics - organic production is regulated under the Federal National Organic Plan and it - or Program - and an organic system's plan has to be put into place, and it does not allow for the use of genetically-modified seeds or any other inputs. But, as you mentioned, we grow organic crops in areas that can have conventional crops around them. There are borders and buffers that are required for safety, but there is no testing that's required if there is organic crops. It is organically certifying the system that it's been growing in that there aren't pesticides being added or any unapproved materials being added to the process which is why some of the organic companies have started up another project called the non-GMO project, which is actually a verification process that does tests the products after they come out of the agricultural system. So you're right. There are contamination issues which is why, we, as a company and as a family, in the '80s when we saw the technology starting, had serious concerns about it because we knew we would challenge purity of our agriculture systems.

And then the second question...

**Greg Dalton:** How do Europeans feed themselves?

**Jessica Lundberg:** How do Europeans feed themselves?

**Ken Cook:** Quite well.

**Jessica Lundberg:** Quite well. They actually eat very well, and they listen to their consumers. And, like I said earlier on, farmers will meet market demand. And if you know that - what your consumers want, then you plan your seed stocks, and you plan your animals, and you plan what you're going to harvest, and supply the market place.

**Kent Bradford:** Can I add to that quickly?

**Greg Dalton:** Kent Bradford

**Kent Bradford:** Europeans feed themselves by using more chemicals per area than we do in the U.S. They are very chemical intensive agriculture - they do have some organic, but they import it from Northern Africa. They say they ship in organic food by airplanes. I don't know if that's entirely green, but they use more chemicals than we do for their agriculture. They also import a whole lot of

genetically-engineered corn and soy beans to feed their animals.

**Greg Dalton:** Let's have our audience question. Hang on one second. Let's get our audience question. We're getting out. We're squeezing this in at the end. We're talking about Proposition 37 at Climate One. Welcome. Yes?

**Audience:** Hi, I'm Ashley. So, since among their main complaints against Prop 37 has been that it would create a stigma that is perhaps undeserved given that research has not concluded that there are health effects that are negative, what if there was a label that - and I'm thinking of milk labels that say, "RBST is not known to cause health effects," or whatever. What if there was a label that said, "This product contains genetically-modified organisms.\* This is not known to cause health effects." Would that get rid of some of the negative effects that you think will be caused by this labeling?

**Jesus Arredondo:** No, because you haven't gotten rid of the regulatory mess that you're creating in the process, and that regulatory mess is what's going to cause the problems, I think. And this is why nearly all of the editorial boards in the State of California have said, "Vote No on Prop 37." It's not drafted right. This is going to create a big mess.

**Ken Cook:** They said the same thing about the main treatment of animal proposition a few years ago, remember? They said that egg costs were going to go through the roof, that we weren't going to have egg production in California any longer, only out-of-state eggs were going to come in. What happened?

**Jesus Arredondo:** Well, we regulated it to that so we can't get anything from out of state.

**Ken Cook:** Well, now we are importing eggs from out of state; we're eating eggs here. They're pretty good far as I can tell. Lots of them right [crosstalk].

**Jesus Arredondo:** I can't afford the ones that you buy though.

**Ken Cook:** No, you can. I don't buy all organic eggs. I've been known to buy conventional eggs. But the point is this, California led the world - led the country first, and this change that voters put on the ballot against the same opposition, the same worries, the same exaggerated claims that we were going to be out of eggs, food prices were going to go up, the same scare tactics about costs. Voters looked aside and said, "We ought to treat animals right," just like they're looking now and trying to decide well, should we label food so that we can tell if it's genetically-engineered.

And what happened was the whole country is starting to make changes. The humane society in the egg - main egg producing association in this country have developed model legislation after experiencing California, but they want to federalize. That's what happens when California's voters act like they usually do - in the public interest.

And we're making the case up here tonight, Jessica and I, that this is a good example of it.

Proposition 37 deserves support. Lead the world - public access to beaches, public access to land, public right to clean air and clean water - this is what you've done here in California. You've led the world. And what we're needing to do now for our food is lead the world once again from California, because everyone is watching this vote.

Vote yes and make sure that the United States gets on track with 50 other countries around the world including China, including India, and most of Europe, and label genetically-engineered food.

And then let's keep developing this technology, do the health and safety studies. Let's move forward if it's as safe as everyone says, and we can resolve these doubts, hallelujah. But in the

meanwhile, the least that we can do is tell our consumers when it's genetically-engineered, when it's not.

[Applause]

**Greg Dalton:** Kent or Jesus would like to - Kent Bradford, let's have your closing statement for 'No on 37.'

**Kent Bradford:** I would totally agree California should lead the country. And I'm a professor at the University of California which is the best public institution in the world. And we should be leading in the ways that California should be. We've been leading in terms of environmental issues. We've been raising knowledge. We've been trying to cut CO2 in the air. I mean, we're leading this charge on that, and it - the - what we're trying to do with improving these crops is in line with that.

We're trying to produce more food. We have 9 billion people on the horizon with less input, more sustainably. I know that you don't connect sustainability with genetic engineering. Go to our website, [sbc.ucdavisseedbiotechnologyforsustainability](http://sbc.ucdavisseedbiotechnologyforsustainability). It's one of - it could be an enormously powerful force for sustainability. California could lead that. Instead, we're going to be stigmatizing this and potentially the case you just heard about the eggs is the case. Is that - that is sweeping across the country now. Maybe it's great. I'm not an anim- - I think animals need to be treated properly, but if it does sweep, then this is going to stymie all those efforts to use this very powerful technology for what we all want - more food, safer food, less carbon in the air, better use of water, nutrients and so on.

You don't - you'll have to believe me on that because the products that are out there don't seem to be in anybody's - nobody seems to be in favor of them. There is so much more to this. And while we're sitting here twiddling our thumbs, you know, the climate is changing, the temperature is rising, the population is growing, and we are tying the hands of scientists who could be making a major contribution to solving those problems.

**Greg Dalton:** We have to end it there. Our thanks to Kent Bradford, director of the Seed Biotechnology Center at UC Davis; Jesus Arredondo, principal and founder of Advantage Government Consulting in Sacramento; Ken Cook, president of the Environmental Working Group; and Jessica Lundberg from Lundberg Family Farms. I'm Greg Dalton. Podcast of this and other Climate One programs are available at the iTunes store, and our thanks to our audience here at the Commonwealth Club and on the radio. Thank you, all.

[Applause]