
Coexistence: The University Role

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Today I will provide a short overview of some issues I see with coexistence and the role of universities. This is my perspective as a faculty member at a land grant university.

The definition of coexistence from Merriam Webster: to coexist means to be together at the same place at the same time. Or to live in peace with each other. Given this definition, I am not quite sure “coexistence” is the word we should be using to describe what we need to do in order to produce genetically engineered, organic, and conventional crops. We may need to think about a different definition with different parameters. Here is a slightly different definition than the one Greg Jaffe used this morning, but it is pretty close: Coexistence in the agricultural sense is the ability of farmers to make a choice between conventional, organic, and GE production and still be in compliance. And that compliance could be to meet legal obligations, because there are already legal obligations in growing GE crops, or to meet certification or market standards for conventional and organic production. In this case, coexistence has entered into a different realm; it is more than saying “We are going to live together and play nice.” Now regulatory issues have been added. We have started talking about compliance issues, and we might as well face the fact that we are talking about litigation issues. There is a big litigation industry in the USA that has had a great deal of input into how these crops are grown or coexist. I will talk about where universities fit in, especially land grant universities.

I will talk just briefly about two projects I am working on, and these do not even involve GE crops. This brings us back to the idea that coexistence does not just involve GE crops. One of the two projects I am involved with deals with canola production. The Willamette Valley of Oregon is known for growing high-quality specialty seed. The reputation of the seed industry is based on seed purity. There are growers who want to grow canola, and on

the other side there is a vibrant *Brassica* specialty seed industry that produces conventional and organic vegetable seed. The crossing between canola and these specialty seed crops could cause market issues, so at this point we are not even talking about GE, we are just talking about seed purity in general. How do we meet our market demands? How do we coexist? A great deal of politics also is involved, so now we have moved from science to marketing and politics.

The other coexistence issue in Oregon is marijuana and industrial hemp. Medicinal and recreational marijuana are legal in Oregon. There are growers who want to produce industrial hemp. Marijuana and industrial hemp are the same species, and marijuana growers are concerned about cross-pollination negatively impacting marijuana quality. How does a land grant university deal with an issue that has so many facets, including the fact that Oregon state law does not reflect federal law in relation to marijuana and industrial hemp use and production?

In both the canola and hemp cases, the university is responding to a legislature that wants Oregon State University to do research so a science-based legal framework can be constructed—we do not necessarily even have a choice of entering the fray.

We do have a mission, and our mission as a land grant university is founded on serving the citizens of our state through research, education, or extension. Extension really is education, but it is based on public outreach rather than formal education within the university. Part of the mission is to provide unbiased information on which to base decisions. Even though we all want to think we are unbiased, everybody has an opinion, and those opinions make it difficult to always be unbiased. Is it even possible to be completely objective about an issue like coexistence, where we are dealing with legal, social, and political issues? It is difficult for individual scientists with a specialty in one discipline to address those other issues. I can guarantee you it is not easy! Do we as a university even have a role to play? I have to say, yes, I believe we do, but we have to think about what that role is in the big picture. We are always going to be the go-to people for unbiased information.

We need to be able to participate in a way that reflects the mission of the university. We need to be able to reach out to all citizens, whether in the general public or the agricultural community, in an unbiased manner. And we have to be able to present information in such a way that we are not advocating for one side versus the other. So even if you have a strong belief on one side of an issue, you still have to come back to the data and base the outreach on that. The reality is that faculty are passionate about their research, and when you are passionate about something, it is difficult to stay unbiased.

If we look at what happens in the university, we should be thinking about the kind of research projects that will address coexistence. The first disciplines to look to are biology, ecology, and agronomy, because we need to know about gene flow, where the seeds are going, and about production. Containing all pollen movement and seed movement with the current technology is not possible. Pollen is going to move, and if GE crops are grown without concern for pollen drift, then we are going to be eating GE-pollinated crops. We have to realize that it is going to happen. I am not sure how much more data we need on this issue. Somebody mentioned today that we have not had much connection with

economics, but I think we have had a lot more interaction there than with social science or political science, I think there are many roles to be played in this area for coexistence.

When we look at formal teaching, there are many different perspectives in the university. So while some pro-GE faculty cannot accept other views, within that same university there are people who are very anti-GE who will not accept that GE may have benefits. Many perspectives are represented, and all of them become part of classroom teaching. The problem is that many faculty lack the background to discuss the different perspectives and may not have informed views. I am neither a social scientist nor a political scientist, so while I can give my scientific perspective in my classroom, I cannot necessarily bring in the other perspectives. I think we have many students graduate without really having an understanding of all of the perspectives. Students get sound bites and, of course, everybody knows that the best information is found on the internet. And that is where students are getting a lot of their information. I have to say that we as scientists have lagged on the idea that we need to be sure they are getting solid, good information on internet sites. If you look at these websites about GE issues, there is very interesting material, even if it is inaccurate. Universities have done little to compete with the misinformation. Further, at non-land grant universities, students have even less opportunity to see solid data related to agriculture. Extension is interesting because of the close relationship with agricultural clientele; at least in agronomy and horticulture, extension personnel are often aligned with a particular agricultural segment. One person may have more interaction with the growers of conventional or GE crops, while others in extension may have more of an alignment with organic growers. That unbiased position that should be taken is threatened by these close relationships. Here is an example from Oregon: A farmer grows Roundup Ready sugar beet for seed. He is very happy doing so, and it is very profitable for him. Another grower is producing organic table beet and Swiss chard seed. The crops easily cross; however, crossing in either direction is undesirable. Gene flow in either direction will impact the seed purity. Where previously there was often friction at the urban-rural interface, now growers are dealing with these contentious issues within the agricultural community. These issues make people within the university, especially in extension, uncomfortable, because the conflicts are between agriculture segments to which they may feel more loyalty.

Many faculty really would prefer not to stand in front of an audience and present a contentious issue, especially an audience that may be hostile or has a very different perspective on some of the issues surrounding GE crops or coexistence than what you might be presenting. It makes a university's administration uncomfortable, because they are afraid of what might be said. There is a feeling that no one should ever be offended. Even when the university should take a stand on an issue, often it does not because of fear of alienating citizens, including those who influence budgets. This fear-driven decision making is the opposite of doing the job right. In some cases taking a position is not going to be popular, and there will be those who are critical of any position. It is critical to rely on the data to support a position, and it is critical to be able to explain the data so that they are understandable and defensible. I have some recommendations:

(1) FOR RESEARCH

I think we should change the structure under which we do some of the research around coexistence, for instance including more of the disciplines I mentioned. Bring the social and political scientists together with agricultural and life scientists. We will still have separate disciplines, we are still doing research, but it needs to be done differently. We need to form teams with diverse skills and opinions. I must say that there is a lot of lip service to this within universities. But it is very difficult to actually make this happen consistently, because while there is funding to do one or the other, there is not much funding for interdisciplinary teams. And it is more difficult to work with a group that has diverse opinions than it is to just work within one's own discipline.

(2) FOR EDUCATION

Require all students to take genetics. That is the first and best thing we can do across the board, not just at the college level but also at the high school level, because many of the misconceptions about GE crops and coexistence are based on ignorance of basic genetics and biotechnology. Multiple surveys have been done that ask people if they want DNA in their food, and they say no. So we have to do a better job of teaching the basics of biology to the general public, starting with our students.

- Develop multidisciplinary courses taught by cross-trained teachers to provide a broad perspective rather than a narrow approach. It would allow us to have multiple people in the classroom to address issues about agriculture, whether it is organic, or conventional, or GE. There are many misconceptions about what we do in agriculture among people who are very against so-called big ag and agricultural corporations. At the same time, the broader social and political perspectives would be included in the discussion.
- Expose students and the general public to those working in the agricultural supply chain, so that they understand what their issues are. Agriculture today is not this quaint little pastime or romantic lifestyle that many perceive from old novels or movies. It is big business, and it is messy. At Oregon State University we have started to develop a speaker bureau with speakers from diverse disciplines to talk with the general public about contentious issues such as labeling, GE technology, and coexistence. The speakers represent diverse opinions that will not be expressed in the same way, but we have to come to a place where we can respect each other's opinions and avoid single-minded, one-dimensional presentations. The speakers are able to present on bigger, wider issues. There needs to be more training in how to actually face an audience, how to bring the scientific perspective to them and at the same time let them know they are respected.

(3) FOR EXTENSION

We have to help extension to serve their clientele. We have to think about how we develop useful materials. We want to explain why coexistence is required and to inform the growers of best management practices (BMPs), which must be very crop- and location-specific. Much of what I have heard today about BMPs is great in theory, but they only apply to very limited situations.

Not to insult anybody on AC21 or anybody on the Oregon governor's task force on coexistence, but these groups began with long lists and ended up with almost the same lists, rearranged, with nothing in-between that actually fixed any problems. We just keep kicking this can down the road, and now we expect it to come full circle to education and research to fix it. This is really not how we are going to find a solution to coexistence. I do not want to be the next person up here to say I believe in regulation, but we have not yet talked about that, and that may end up being the solution. We need to stop talking in circles as we have done for the last 20 years.

I will finish this talk about coexistence and the university role in it by stressing that the discussion of issues surrounding coexistence is not for the faint of heart. The issue is very contentious, and there are a lot of hidden agendas, so you can walk into a minefield—a minefield that can have a lot of negative consequences for a faculty member. Since the attacks can be on so many different levels, many faculty members simply avoid getting involved.

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