Union of Concerned Scientists: Advocacy group promotes unscientific views on GMOs

The Union of Concerned Scientists (UCS) is a nonprofit organization that states it aims to protect the rights of scientists, train scientists to be better engaged with the public and media and push the media and policymakers to better represent the current state of scientific understanding on a variety of issues, such as climate change. All of this important work “is why it’s so disappointing that they are so wrong on genetically modified organisms,” wrote Harvard microbiologist Kevin Bonham about UCS, reflecting the general concern among scientists.

The organization’s website includes a section on “Our Failing Food System” which advocates for “transforming our food system to ensure healthy, sustainably grown food for all.” and is critical of “an outdated, unsustainable system of industrial agriculture, which has damaging impacts on soil, air, water, human health, and rural economies.” One of UCS’ posts is entitled “Eight Ways Monsanto Fails at Sustainable Agriculture” in which it accuses the company of promoting pesticide resistance, increasing herbicide use, spreading gene contamination, and more.

More recently, under the direction of Ricardo Salvador, current director of UCS’ Food and Environment Program, the organization has begun aggressively promoting agroecology as the preferred farming method. In April of 2017, the organization issued a “Call for Public Investment in Agroecological Research,” signed by more than 450 scientists and other supporters. Among other things, it calls for “controlling pests and weeds with fewer chemical pesticides.” It makes no mention of the fact that insect-resistant GMO crops have cut insecticide use by as much as 90% and overall chemical use has declined 22% with the introduction of GMO crops. In fact, UCS misrepresents the impact of GMO adoption on chemical usage on one of its “information” pages, “Genetic Engineering in Agriculture.” Its solution to what it calls the “epidemic” of chemical overuse in “industrial farming”: “healthy farms,” by which it means agroecology, which it portrays as antithetical to crop biotechnology and many technological agricultural advances.

Agroecology is a both a movement and a science—a fuzziness that leads to confusion over what the term means. When originally conceptualized and applied without an ideological bias, as it has at UCS, it is not tied to a particular view or farming process, such as organic or conventional; the bottom line is: what’s sustainable. Andrew Kniss, a weed expert at the University of Wyoming who incorporates agroecological perspectives into his teaching, noted the blurry definition of agroecology and its misuse by many people who see it almost as a spiritual movement:

Most frustrating to me, is when agroecology is used in this context: “We don’t need [insert technology here], because we have agroecology!

In the agroecology program at the University of Wyoming, we teach that proper use of technology is an indispensable part of achieving sustainability. After all, if technology in crop production was shunned, we’d have succumbed to the Malthusian catastrophe many
Most of UCS’ food and farming information was developed by Doug Gurian-Sherman (GLP profile [here](#)) and Margaret Mellon (GLP profile [here](#)). Mellon is now a science consultant at the Center for Food Safety (GLP profile [here](#)), known as the “legal swat team of the anti-GMO movement.” After his departure from UCS, Gurian-Sherman joined CFS as director of sustainable agriculture and senior scientist, then left that position to become a consultant on agriculture with Strategic Expansion and Training in Minneapolis. UCS’ current [food and agriculture team](#) maintains and promotes many of the reports, blog posts and web pages developed by Gurian-Sherman and Mellon.

Gurian-Sherman and UCS are perhaps best known in the GMO debate for a controversial 2009 report titled “Failure to Yield”, which claimed that crop biotechnology had not lived up to its promise to increase yields. The report, and subsequent coverage by UCS, favored organics and agroecology as a superior production method. The piece was not peer reviewed and has been contradicted by dozens of studies. Per-acre yields of organic crops are significantly lower than those for conventional, with estimates ranging from 10-35%, and even higher among some grains and vegetables. These gaps have been established both by meta-analysis of published research and by USDA surveys. In the most comprehensive study to date on the GMO yield gap question, PLOS ONE published [A Meta-Analysis of the Impacts of Genetically Modified Crops](#) in 2014, crunching data from 147 studies and finding that GM
crops increased yields by an average of 22 percent. Several studies have also shown that GMO crops adopted in developing countries, such as Bt cotton, have significantly increased yields in addition to decreasing pesticide use.

2017 research led by Jayson Lusk, professor in the Department of Agricultural Economics at Oklahoma State University, suggests that the UCS analysis showing no difference in yields between GE and non-GE corn was wrong because it did not control for weather. “Once temperature and precipitation controls are added, GE adoption has significant effects on corn yields,” the study found.

The Gurian-Sherman study remains prominently displayed on the UCS website.

In a 2014 op-ed published by MIT Technology Review titled “Are GMOs worth the trouble?”, Gurian-Sherman asserted “It’s also worth noting that there’s no real consensus on GMO crop safety.” The UCS website also continues to propagate this view:

While the risks of genetic engineering are often exaggerated or misrepresented, GE crops do have the potential to cause a variety of health problems and environmental impacts,... For instance, they may spread undesirable traits to weeds and non-GE crops, produce new allergens and toxins, or harm animals that consume them.

According to the World Health Organization, “GM foods currently available on the international market have passed risk assessments and are not likely to present risks for human health.” A strong scientific consensus exists on GM food safety. A National Academies of Sciences report which reviewed more than 900 studies found that “no adverse health effects attributed to genetic engineering have been documented in the human population.” A review by Italian researchers found 1,783 studies published between 2002 and 2012 on genetically modified foods, and concluded: “the scientific research conducted so far has not detected any significant hazards directly connected with the use of GE crops.” The American Association for the Advancement of Science, the American Medical Association and more than 275 scientific and medical institutions from around the world agree that genetically modified foods pose no unique safety issues not also found in other conventional or organic foods.

Bonham has written several rebuttals directed at UCS claims. In a 2013 Scientific American article, he showed that the group’s claims that GMOs can cause allergies were not backed by science. He wrote that UCS’ allergy claim was “at best wildly misleading and at worse an all-out fabrication. For an organization dedicated to informing citizens about science, I’m a bit appalled that they got this one so wrong.” He continues:

This is patently false – genetic engineering techniques allow us to precisely add genes of known structure and function to crops. It would in principle be possible to engineer corn that expresses anthrax toxin, or introduce peanut allergens into soybeans, but this would have to be by malicious intent of the scientists, not some accident. We know how genes work, and we know what kind of protein an individual gene will make.

In 2014, UCS released a video (below) critical of Monsanto and the company’s herbicide-tolerant GM crops for contributing to the “superweed” problem, and advocated moving away from synthetic herbicides
in agriculture. The UCS produced the video to promote a policy brief by Gurian-Sherman and Mellon.

In response, Jon Entine and XiaoZhi Lim wrote at the Genetic Literacy Project that “most ecologists and farming experts contend that removing chemical weed-control options from farmers, including limiting biotechnology, and returning to organic agriculture is too simplistic; multiple tools are needed to control weeds effectively without burdening farmers.”

Just Label It, an anti-GMO group pushing for mandatory labeling, lists UCS as one of its “partners.” The American Association of the Advancement of Science opposes legally mandating GM food labels because they could “mislead and falsely alarm consumers.” “Foods containing ingredients from genetically modified (GM) crops pose no greater risk than the same foods made from crops modified by conventional plant breeding techniques,” AAAS writes.

Unknown

Ricardo Salvador was quoted in a Washington Post article on genetic engineering’s potential to benefit ocean environments: “I think we have to be open-minded about this,” said Salvador. “It does seem to deal with the constraint we have in sustainable fisheries.” Yet he has also said that he stands by Gurian-Sherman’s work for UCS on GMOs:

Doug is an esteemed colleague, who produced a number of rigorous scientific analyses during his tenure with the Union of Concerned Scientists. His reports are featured on our website and we stand behind them and the quality of his work as a scientist. We were very pleased that Doug was able to step into a position of leadership within the field, as Director of Sustainable Agriculture at the Center for Food Safety, and we anticipate that in the future we will continue collaborating with him on science and policy matters of mutual interest.
UCS did carry a guest editorial on its blog in 2016 when the anti-GMO group US Right to Know (GLP profile here) used the Freedom of Information Act (FOIA) to gain unfettered access to scientists’ emails, but the criticism was written by an outside contributing writer from a different NGO. UCS has not weighed in on the issue of FOIA abuse and USRTK directly.

**Background**

UCS is based in the United States. Membership includes both private citizens and professional scientists. According to its website, the organization’s motto is “science for a healthy planet and safer world.” It focuses on 6 key issues: clean energy, clean vehicles, food & agriculture, global warming, nuclear power and nuclear weapons. UCS employs scientists, engineers, economists and policy experts in a variety of fields.

69 percent of UCS’ funding comes from membership and contributions, 18 percent from foundations, 10 percent from planned gifts and 3 percent from investments. UCS claims more than 100,000 members. The group spends 83 percent of its revenue on programs, 14 percent on fundraising and member communications and 3 percent on general and administrative expenses. Of its program spending, 34 percent is on climate and energy issues, 15 percent on food and environmental issues, 12 percent for their Center for Science and Democracy, 11 percent on clean vehicle issues, 10 percent on global security issues and 1 percent on legislative issues.

**History**

The Union of Concerned Scientists was founded in 1969 by Massachusetts Institute of Technology faculty and students. The group’s founding document states that it was formed to “initiate a critical and continuing examination of governmental policy in areas where science and technology are of actual or potential significance” and “devise means for turning research applications away from the present emphasis on military technology toward the solution of pressing environmental and social problems.” The organization’s website includes a timeline of accomplishments.

**Criticism**

Science journalist and NYU professor Keith Kloor criticized the organization in 2014 for “double standards” after the group took on Robert Kennedy Jr.’s anti-vaccine views, but has not done the same on anti-GMO activism. “The Union of Concerned Scientists (UCS) might want to take a look in the mirror,” wrote Kloor. “For the same criticism they make of Kennedy has been leveled against them–on the issue of GMOs.”

In 2013, University of California, Davis geneticist Pamela Ronald criticized Mellon and UCS on GMOs:
Margaret Mellon’s organization, the Union of Concerned Scientists, once well respected, is now, on this subject, increasingly untethered from science. UCS has disregarded decades of research and the conclusions of the global scientific community and displayed little concern for farmers, global food security, and environmental degradation. Mellon herself claims no inherent objection to genetic engineering, but UCS continues to fan the flames of misinformation and fear. Their website sounds a false alarm: “GE crops do have the potential to cause a variety of health problems and environmental impacts. For instance, they may produce new allergens and toxins, spread harmful traits to weeds and non-GE crops, or harm animals that consume them.

Ronald also posted a blog post in 2013 in which she thought she was clarifying UCS’ position on GMOs. She claimed, “UCS concurs with the broad scientific consensus” on GMOs. However, UCS responded, “Pam Ronald’s statements … do not represent positions of the Union of Concerned Scientists” and referred readers to UCS blog posts, reports, and web pages on the topic.

University of Georgia crop scientist Wayne Parrott criticized UCS for standing in the way of GE technology that has the potential to help people and the environment:

To the extent to which groups like UCS have advocated prohibitive and disproportional regulations, they are responsible for the lack of even greater achievements in operational yield and perhaps even in intrinsic yield. … In fact UCS is on the record as opposing engineered stress tolerance in crops. Such a stance by UCS is untenable and contradictory—yield losses caused by adverse growing conditions defeats the purpose of having a higher intrinsic yield—that is why it is so important to increase operational yield, and increasing operational yield is done with resistance to biotic and abiotic stresses—i.e., adverse growing conditions. … In the end, after helping prevent scientific advances with genetically modified crops. … The UCS is not in a good position to be calling genetically modified crops a failure because their scientific advances have not been greater.”

In 2013, a UCS blog post titled “Science, Dogma, and Mark Lynas” by Gurian-Sherman criticized environmentalist Lynas for his conversion from anti-GMO activist to genetic engineering proponent. Lynas responded in a post on his website, writing, “This piece confirms my long-held opinion that the Union of Concerned Scientists is in dire need of a name change.” Lynas continued:

Any scientists working for the UCS leave their credentials at the door. It is one of the most ideological of all the green groups, and the fact that the author of this piece takes issue with none other than the AAAS over the safety and efficacy of GMOs shows that it has no respect for scientific consensus in areas where real scientists conflict with its biases. The rest of the piece consists of personal attacks on me and a highly-skewed and selective scattering of references of the sort that any ‘climate denier’ would be proud of.

Mary Mangan, PhD in cell, molecular, and developmental biology, referred to UCS as “The Union of Concerned Trolls” in a 2014 blog post, criticizing MIT Technology Review for publishing an article by Gurian-Sherman. She called the piece “a despicable misrepresentation of the facts” and asked if “Gurian-
Sherman fits the definition of a “concern troll.”

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