

Study: Crop diversity myths persist in media

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The conventional wisdom that says the 20th century was a disaster for crop diversity is nothing more than a myth, according to a forthcoming study by a University of Illinois expert in intellectual property law.

Law professor Paul Heald says overall varietal diversity of the \$20 billion market for vegetable crops and apples in the U.S. actually has increased over the past 100 years, a finding that should change the highly politicized debate over intellectual property policy.

"The [conventional wisdom](#), as illustrated in the July 2011 issue of *National Geographic*, holds that the last century was a disaster for crop diversity," he said. "In the [mainstream media](#), this position is so entrenched that it no longer merits a citation."

To support their conclusions, Heald and co-author Susannah Chapman, a doctoral candidate in anthropology at the University of Georgia, studied thousands of commercially available varieties of 42 vegetable crops from 1903 to 2004, as well as varieties of apples from 1900 to 2000.

"When we began this study, we started with the assumption that every year we advanced in the 20th century there would be fewer and fewer varieties offered for sale commercially," Heald said.

But when the researchers went to Washington to study varieties available in historical commercial seed and nursery catalogs, they were surprised by what they found as they worked through the years 1900 to 1930.

"There was no evident sign of decline, so we decided to step back and take a snapshot of 1903 and 2004, two years where others had collected full data on all important [vegetable crops](#)," Heald said. "We came to this with the exact same [preconceptions](#) as everyone else, but we couldn't ignore facts that were smacking us in the face."

According to Heald, the reason no one questioned the conventional wisdom of a crop diversity crisis earlier is that the narrative "resonates so completely with assumptions made in all the socio-biological fields."

"Humans generally cause significant environmental damage, so this false notion of waning crop diversity fits an accepted narrative," Heald said. "It reconfirms what people already believe, and that belief is certainly bolstered by people's casual observations about lack of diversity in the supermarket."

Heald says the lack of choice in the fruit and vegetable section of grocery stores creates the impression that there's a diversity crisis.

"Since we don't see the diversity, it must not be there," he said. "It fits in with a narrative of bad environmental news. There's no doubt the 20th century was a bad century for the environment, so it must also have been a bad century for [crop diversity](#). But it turns out this is one area in the last century that was pretty good. So all these factors bundled together led to a consensus that was never questioned and never really explored systematically until now."

According to the study, 40 percent of the diversity gains the researchers found were from imports, but only 3 percent of gains could be traced to patents and less than 1 percent from biotechnological innovation.

"The influx of immigrants from South America and Asia have really brought a lot of new germ plasm into the U.S.," Heald said. "Seeds

stored in suitcases and purses can move around the world without anyone knowing or the government playing any significant role. On the other hand, government stimulus, like [patent](#) law, plays a role in only 3 percent of diversity gains, with biotech innovation constituting less than 1 percent."

In the debate between economists who believe that patent law is essential to increasing plant diversity through innovation, and anthropologists and ethno-botanists who believe that patents destroyed plant diversity in the 20th century, Heald says the study demonstrates that both sides are wrong.

"The story of vegetables and apples in the 20th century is a story of markets working without government intervention, so it's really a confluence of liberal and conservative dogma," he said. "You see immigrants, off-the-grid seed savers, small farmers and local gardeners preserving and innovating. They create what appears to be a very efficient market for diversity in the absence of significant legal regulation."

The study also includes the caveat that corn may be the exception to the influence of the patent system, as federal property rights play a more prevalent role in the ubiquitous crop, as well as with soybeans and cotton.

"The interesting question is, 'Why do firms patent these new strains of corn?' " Heald said. "Some agricultural economists would say that patents allow a firm to capture a certain segment of the market, but people who study varieties of patented corn say that it's more of a phenomenon of defensive patenting, where you patent something because you don't want to be sued by someone else when they try to patent the exact same thing. Since patent suits can be expensive, it's easier and safer to patent what you produce."

But to become a player in the corn market, you may need as big of a patent portfolio as the competition, Heald says.

"There's also the sense – and this has been borne out in other industries, such as computer technology – that you want to create this huge arsenal of patents that you can wield as a big club in the market," he said. "If that's true, then, ironically, it may be inefficient to have patent protection, if the public gets too much of this sort of game-playing and legal jockeying.

"So the interesting question is, do you really need patent protection to stimulate new kinds of corn? That, of course, is going to turn on how expensive it is to create a new strain, and how easy to appropriate the technology."

More information: The paper is titled "Veggie Tales: Pernicious Myths About Patents, Innovation, and Crop Diversity in the Twentieth Century."

Provided by University of Illinois at Urbana-Champaign

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