

Latest News

Web Date: October 29, 2010

# Do Antibiotics in Wastewater Pollute Food Crops?

**Water Contaminants: Irrigation does not transfer common antibiotics found in treated wastewater to plants**

By *Rachel A. Zurer*



## TAINTED WATER

Scientists want to know if food crops irrigated with treated wastewater can absorb antibiotics and other contaminants.

Credit: Chris Austin

Antibiotics and other pharmaceuticals linger in treated wastewater that farmers use to irrigate food crops. Scientists wonder whether plants absorb these contaminants and, if so, whether the drugs affect human health. Now researchers find that a range of food crops do not take up antibiotics from irrigation water (*J. Agric. Food Chem.*, DOI: **10.1021/jf1028152** <[http://pubs.acs.org/cgi-bin/cen/trustedproxy.cgi?](http://pubs.acs.org/cgi-bin/cen/trustedproxy.cgi?redirect=http://pubs.acs.org/doi/abs/10.1021/jf1028152)

**redirect=<http://pubs.acs.org/doi/abs/10.1021/jf1028152>> ).**

Few studies have examined food crops exposed to pharmaceuticals in irrigation water.

## One study published in July

<<http://pubs.acs.org/cen/news/88/i32/8832news.html>> found that soybean plants grown in a greenhouse did absorb some chemicals. But none had looked at exposure in actual crop fields.

So research chemist **Tammy Jones-Lepp**

<<http://www.epa.gov/esd/bios/jones.htm>> and her colleagues at the

**Environmental Protection Agency** <<http://www.epa.gov/>> partnered with University of Arizona scientists to examine common southwestern food crops grown in university-owned fields. The experiment focused on antibiotics, because of the fear that they could foster resistance in microbes.

The researchers irrigated fields growing carrots, spinach, cantaloupe, peppers and watermelon using recycled wastewater. This water contained the common antibiotic azithromycin, along with contaminants such as pseudoephedrine, methamphetamine and the industrial flavoring n,n-dimethylphenethylamine (DMPEA). After the plants grew to maturity, the scientists analyzed their tissues using liquid chromatography combined with mass spectrometry and solid-phase extraction. They found no absorbed antibiotics. The only contaminant they detected was DMPEA.

Based on their data, collaborator **Charles A. Sanchez**

<http://ag.arizona.edu/swes/people/cv/sanchez.htm> , a soil chemist at the **University of Arizona** <http://www.arizona.edu/> , says that irrigation is probably not a major source of antibiotic accumulation in crops. "But we do have to take a look at composts," he says. Most compost contains biosolids from animal farms that contain significant levels of antibiotics and hormones.

Environmental chemist **Chad Kinney** <http://www.faculty.colostate-pueblo.edu/chad.kinney/index.htm> of **Colorado State University**

<http://www.colostate-pueblo.edu/Pages/default.aspx> , Pueblo, praises the study, but says that different growing conditions, such as changes in soil pH, may make plants take up more contaminants.

Chemical & Engineering News

ISSN 0009-2347

Copyright © 2016 American Chemical Society

---