

Healthy farms and nature are not at odds: Reducing environmental impacts of food safety practices

Karp DS, Gennet S, Kilonzo C, Partyka M, Chaumont N, Atwill ER, Kremen C. (2015) **Co-managing fresh produce for nature conservation and food safety**. *Proceedings of the National Academy of Sciences*. August 10, 2015

<http://www.pnas.org/content/early/2015/08/05/1508435112.abstract>

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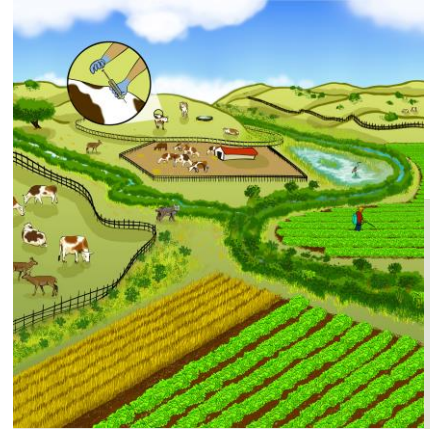
In 2006, a high profile outbreak of toxic *E. coli* in bagged spinach was traced to California's Central Coast, where >70% of the United States' salad greens and vegetables are produced. Though no definitive cause for the outbreak could be determined, wildlife was implicated because some animals can harbor pathogens. Growers were subsequently pressured, primarily through their buyers and sometimes through regulatory mechanisms, to reduce perceived risk by adopting practices to minimize potential wildlife intrusion onto their farm fields. Specifically, growers were asked to remove surrounding non-crop (natural) vegetation presumed to harbor wildlife. This practice is expensive for growers to implement and has led to a significant loss of important natural habitat in the region.

The authors of a study in the *Proceedings of the National Academy of Sciences* assessed whether the presence of non-crop vegetation is associated with foodborne pathogen prevalence on farms. They used a detailed vegetation map and examined ~250,000 pathogen samples including enterohemorrhagic *E. coli* (EHEC), generic *E. coli*, and *Salmonella* bacteria. Although EHEC prevalence in produce was higher on farms near areas suitable for livestock grazing, there was no evidence that EHEC, generic *E. coli*, or *Salmonella* increased near non-grazed, semi-natural areas. Rather, pathogen prevalence increased most on farms where non-crop vegetation was removed.

The authors recommend that buyers, auditors, and regulators encourage science-based approaches to co-manage for environmental quality and food safety. The findings of this study suggest that the requirement for farmers to clear non-crop vegetation is unnecessary, at best, and is damaging to the natural environment. Government agencies and buyers can instead promote both food safety and ecosystem benefits by funding and encouraging practices such as vegetated buffers and wildlife-friendly fencing of riparian areas.

Practices to conserve vegetation and wildlife habitat will help sustain agricultural productivity by providing natural benefits such as pest control, water quality, groundwater recharge, and pollination services. These benefits are urgently needed for agriculture, and will be increasingly valuable over time. A diverse farming landscape, including non-crop vegetation on and near farms, promotes these benefits.

California has long been a global leader in agriculture. By addressing the serious issues of food safety and ecosystem benefits together, California has the opportunity to demonstrate a path toward harmonizing environmental quality, agricultural productivity and human health.



Schematic of farm environment using co-management approach for food safety and environment

KEY POINTS

Produce growers in California have been pressured to remove non-crop vegetation and wildlife habitat on farms for food safety

A new study shows this practice of habitat removal around farms is costly, damaging to the environment, and **is not effective in reducing pathogens. In fact, it may result in higher prevalence of some pathogens.**

Habitat removal should no longer be encouraged. Buyers and regulators should instead support farming practices that enhance nature for its beneficial functions.

Proximity of grazeable lands near farm fields is correlated with pathogens. However, practices such as vegetated water quality buffers and riparian fencing can help mitigate associated risk.

California can be a global leader in demonstrating sustainable agriculture by solving this key challenge to nature and human health.