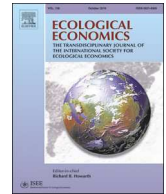




Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Ecological Economics

journal homepage: www.elsevier.com/locate/ecocon



Fairtrade, Agrochemical Input Use, and Effects on Human Health and the Environment



Jorge Sellare^{a,b,*}, Eva-Marie Meemken^{c,d}, Matin Qaim^a

^a Department of Agricultural Economics and Rural Development, University of Goettingen, Platz der Goettinger Sieben 5, 37073 Goettingen, Germany

^b Center for Development Research (ZEF), University of Bonn, Genscherallee 3, 53113 Bonn, Germany

^c Department of Food and Resource Economics, University of Copenhagen, Rolighedsvej 25, 1958 Frederiksberg, Denmark

^d CH Dyson School of Applied Economics and Management, Cornell University, Warren Hall, 14853 Ithaca, USA

ARTICLE INFO

Keywords:

Agrochemicals
Certification
Fairtrade
Health
Pesticides
Sustainability standards
Toxicity

ABSTRACT

It is often assumed that voluntary sustainability standards – such as Fairtrade – could not only improve the socioeconomic wellbeing of smallholder farmers in developing countries but could also help to reduce negative health and environmental impacts of agricultural production. The empirical evidence is thin, as most previous studies on the impact of sustainability standards only focused on economic indicators, such as prices, yields, and incomes. Here, we argue that Fairtrade and other sustainability standards can affect agrochemical input use through various mechanisms with possible positive and negative health and environmental effects. We use data from farmers and rural workers in Cote d'Ivoire to analyze effects of Fairtrade certification on fertilizer and pesticide use, as well as on human health and environmental toxicity. Fairtrade increases chemical input quantities and aggregated levels of toxicity. Nevertheless, Fairtrade reduces the incidence of pesticide-related acute health symptoms among farmers and workers. Certified cooperatives are more likely to offer training and other services related to the safe handling of pesticides and occupational health, which can reduce negative externalities in spite of higher input quantities. These results suggest that simplistic assumptions about the health and environmental effects of sustainability standards may be inappropriate.