



## Pesticide impacts on bumblebee decline: a missing piece

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Szabo *et al.* (2012) have addressed an important issue by examining potential causes of widespread declines in bumblebees across North America. While we commend their investigation of the role pesticides may play in pollinator declines, the data set they relied on is out of date and missing a key class of pesticides. The 2002 USDA Agriculture Census tracked pesticide application in an “acres treated” metric that captured information about how fields were treated via traditional methods like spraying (USDA NASS 2002). In recent years, the use of seed treatments to protect newly emerged plants has greatly increased; almost all of the corn seed planted in the United States is now treated with neonicotinoid pesticides (Krupke *et al.* 2012). However, these insecticidal seed treatments are not included in the “acres treated” data from the 2002 USDA Agriculture Census (Theresa Varner, USDA NASS Specialist, personal communication, July 11, 2012) and are not annually tracked in any public data collection.

Neonicotinoids, the active ingredients in seed treatments, are systemic insecticides expressed throughout the plant tissue. They can negatively impact bumblebees with a range of sublethal to lethal impacts depending on the

dose and exposure (Scott-Dupree *et al.* 2009; Whitehorn *et al.* 2012). New routes of exposure to pollinators from treated seed have been identified, including dust from planting machinery (Krupke *et al.* 2012). Several countries have restricted neonicotinoids (e.g., France, Germany, and Italy) or initiated reevaluations of their registration (e.g., Canada) based on recent evidence of harm to bees (US EPA 2012; Health Canada Pest Management Regulatory Agency 2012). Without data that include these widely used systemic insecticides, the authors cannot reliably assert that pesticides have not played a role in bumblebee declines across North America.

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