

# Curbing pesticides will slash wheat yields, study says

March 20 2014

---



A farmer harvests a wheat field with a combine harvester in Mametz, northern France, on August 13, 2013

France's winter wheat harvest could shrink by over a tenth if farmers meet targets to halve pesticide use, said a study Thursday highlighting the challenge of feeding Earth's growing population.

The estimates come from field trials where scientists compared yields to cuts in pesticide use.

Extrapolated for the country as a whole, halving pesticide use could mean a decline in winter wheat production of two to three million tonnes per year, the researchers said.

This amounts to a reduction of five to 13 percent of national production of winter wheat, and 15 percent of French wheat exports.

Halving pesticide use "may not be profitable for farmers", the team wrote in the Nature journal *Scientific Reports*.

With projections of an extra two billion mouths to feed by 2050 and a shortage of new farmland, increasing crop yield per hectare has never been as urgent.

Pesticides played a crucial role in doubling the average yield of cereal crops worldwide from 1960 to 1990, but their impact on human health and biodiversity have made them controversial.

European farmers are encouraged to limit pesticide use, and French environmental policy targets a 50-percent reduction by 2018.

Now researchers have calculated what the impact of such a policy is likely to be.

They used data from 176 experimental farming plots from four sites in France that compared yields for wheat grown with pesticides, with less pesticides, or with none.

Statistical modelling then estimated a broader scenario for France.

The country had average wheat yield of 7.11 tonnes per hectare between 2008 and 2012. With a 50 percent pesticide reduction, the yield dropped by 0.4 to 0.9 tonnes per hectare, compared to 2-2.3 tonnes per hectare if

pesticides are eliminated altogether, the team found.

Savings from using less pesticide would not make up the difference.

Halving pesticide use would decrease input costs for [winter wheat](#) by about 66 euros per hectare in France, said the team.

This means a yield loss of 0.4 tonnes per hectare (80 euros lost per hectare) would be only partly compensated, at current wheat prices of more than 200 euros (\$280) per tonne.

"Even with the smallest estimated grain yield loss, a 50 percent... reduction may not be profitable for farmers," the team wrote.

There might be gains in other areas, said the team, by reducing the cost, for example, of purifying pesticide-polluted water—estimated at between four and 15 billion euros in France in 2011.

The study was not designed to test whether reduced [pesticide use](#) had an impact on other crop types or whether the switch had environmental benefits that could affect yields in the longer term.

© 2014 AFP

Citation: Curbing pesticides will slash wheat yields, study says (2014, March 20) retrieved 9 April 2024 from <https://phys.org/news/2014-03-curbing-pesticides-slash-wheat-yields.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.