

The Contributions of Pesticides to Pest Management in Meeting the Global Need for Food Production by 2050

Considering the inevitability of a growing population, cost-efficient [food production](#) must increase.

- More than 800 million people in the world are food insecure, and the amount of crop yield lost yearly to pests can run upwards of 30%.
- When pesticides are effectively applied and fully integrated into a comprehensive approach, the world will be on its way to providing sustenance for the 9 billion humans on earth in 2050.

Direct losses to [plant diseases](#) may include reductions in both yield and quality.

- For most crops, some type of disease management is necessary.
- Exclusion of pathogens from areas in which they are not established is the best way to prevent problems.
- Spraying fungicides to kill plant fungal pathogens began in earnest in the 1800s in France.
- Research with synthetic chemical fungicides began in the 1940s and demonstrated that crop yields were higher as a result of improved disease control.



For thousands of years, farmers used alternative [nonchemical methods](#) for weed control.

- The benefits of herbicides are best understood by comparing their practicality, cost, effectiveness, and reliability to hand weeding and cultivation.
- For most crops, historical data indicate an increase in yields due to herbicide use.
- A major conclusion of research [into alternative methods of weed control] is that the levels of control achieved by alternative practices are inferior to the control from herbicides.
- The use of herbicides has facilitated the adoption of several important agronomic practices and has impacts on all phases of crop production.

Insect pests have [competed with humans](#) for resources throughout history.

- Cultural and mechanical practices were commonly used [prior to 1938].
- The development of resistance to insecticides by pest insects and mites is a major problem.
- Integrated pest management is a systems approach, emphasizing sustainability of pest controls as well as maintaining the utility of insecticides as a viable tool.

Pesticide [benefits](#) in the developing/developed world:

- Lower crop yields in developing countries are due in large part to uncontrolled pests.
- Pesticide research in developing countries shows great potential to increase yields.
- Pesticide use in developing countries has a very favorable cost/benefit ratio.
- Pesticide use in developing countries will promote use of other sustainable practices.

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