

# Biopesticide

From Wikipedia, the free encyclopedia

According to the United States Environmental Protection Agency (EPA), "biopesticides" are naturally occurring substances (biochemical pesticides) that control pests, microorganisms that control pests (microbial pesticides), and pesticidal substances produced by plants containing added genetic material, plant-incorporated protectants.

Biopesticides are biochemical pesticides that are naturally occurring substances that control pests by nontoxic mechanisms. Conventional pesticides, by contrast, are generally synthetic materials that directly kill or inactivate the pests. For example, a plant in the presence of chitosan will naturally induce systemic resistance (ISR) to allow the plant to defend itself against disease, pathogens and pests.<sup>[1]</sup>

Biopesticides are considered eco-friendly and easy to use.<sup>[2]</sup> In the USA, the EPA regulates the registration and use of earth friendly biopesticides.<sup>[3]</sup>

## Biopesticides fall into three major classes

- Microbial or biological pesticides may consist of bacteria, entomopathogenic fungi or viruses (and sometimes includes the metabolites that bacteria or fungi produce). Entomopathogenic nematodes are also often classed as microbial pesticides, even though they are multi-cellular.
- Plant-incorporated protectants, (PIPs) have genetic material from other species incorporated into their genetic material (*i.e.* GM crops).
- Biochemical pesticides are naturally occurring substances that control pests by nontoxic mechanisms.

Various naturally-occurring materials, including fungal or plant extracts, have been described as biopesticides<sup>[4]</sup>. Products in this category have included:

- Chitin
- Chitosan
- Spinosad
- Insect pheromones and other semiochemicals

Biopesticides are certain natural plant products that belong to the so-called secondary metabolites, which include thousands of alkaloids, terpenoids, phenolics and minor secondary chemicals. Biopesticides are derived from such natural materials as animals, plants, bacteria, and certain minerals. For example, canola oil and baking soda have pesticidal applications and are considered biopesticides. At the end of 2001, there were approximately 195 registered biopesticide active ingredients and 780 products.

Biopesticides have usually no known function in photosynthesis, growth or other basic aspects of plant physiology; however, their biological activity against insect pests, nematodes, fungi and other organisms is well documented. Every plant species has developed an built in unique chemical complex structure that protects it from pests. The plant kingdom offers a diverse array of complex chemical structures and almost every imaginable biological activity. These biodegradable, economical and renewable alternatives are used especially under organic farming systems.

## See also

- Biological pesticide

- Pesticide

## References

1. ^ "Benhamou N., Lafontaine P.J., Nicole M., Induction of systemic resistance to Fusarium crown and root rot in tomato plants by seed treatment with chitosan, *Phytopathology*, 1994 - [apsnet.org](http://apsnet.org)".  
[http://apsnet.org/phyto/PDFS/1994/Phyto84n12\\_1432.pdf](http://apsnet.org/phyto/PDFS/1994/Phyto84n12_1432.pdf).
2. ^ "EPA: What are Biopesticide". <http://www.epa.gov/opp00001/biopesticides/whatarebiopesticides.htm>.
3. ^ "EPA: Regulating Biopesticides". <http://www.epa.gov/pesticides/biopesticides/>.
4. ^ Copping L.G. (ed.) (2004). *The Manual of Biocontrol Agents (formerly the Biopesticide Manual) 3rd Ed.*. British Crop Production Council (BCPC), Farnham, Surrey, UK.

Retrieved from "<http://en.wikipedia.org/wiki/Biopesticide>"

Categories: [Pesticides](#) | [Horticulture stubs](#)

---

- This page was last modified on 14 May 2011 at 11:27.
- Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. See Terms of Use for details.  
Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.