

CURRICULUM VITAE

Angelika Hilbeck

CURRENT ADDRESSES:

Swiss Federal Institute of Technology (ETHZ)
Geobotanical Institute
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PERSONAL:

Born: 6 December 1959
Nationality: German

ACADEMIC EDUCATION:

1994: Ph.D., Entomology, North Carolina State University, Raleigh, NC, USA

Department of Entomology, October 1994 (biological control, insect ecology, plant-insect interactions)

1990: Diplom/Masters, Agricultural Biology, University of Hohenheim, Stuttgart, Germany

Institute of Phytomedicine, April 1990 (phytomedicine, plant ecology, agricultural production in the tropics and subtropics, vegetable production)

PROFESSIONAL ACADEMIC EMPLOYMENT HISTORY:

1/2000 - present: Senior researcher, ETH, Geobotanical Institute, Zurich Switzerland
(Habilitation 2005)

11/1994 - 11/1999: Project leader
Swiss Federal Research Station for Agroecology and Agriculture
Zurich, Switzerland

5/1990 - 10/1994: Graduate Research Assistant (Ph.D.)
Department of Entomology, North Carolina State University, Raleigh,
USA

3/1988 - 12/1989: Graduate Research Assistant (M.S.)
Institute of Phytomedicine, Department of Entomology
University of Hohenheim, Stuttgart, Germany

12/1986 - 2/1988: Graduate Research Assistant
Institute of Plant Ecology, University of Hohenheim, Stuttgart,
Germany

6/1986 - 9/1986: Graduate Research Assistant
Department of Viticulture and Enology,
University of California, Davis, California, USA

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MAIN RESEARCH FIELDS

- **Biodiversity and nontarget effects of transgenic plants**
- **Consequences of gene flow and introgression of transgenes**
- **Post-commercialization monitoring concepts for transgenic plants**
- **Coexistence of agricultural production systems with and without transgenic plants**

- **Environmental risk assessment and international capacity building (focal countries: Brazil, Kenya, Vietnam) - The GMO Guidelines Project**

Organization and Moderation of:

- 1st Workshop and Public Day of GMO-Guidelines Project, ICIPE, Nairobi, Kenya, 25-29 November 2002
- 2nd Workshop and Public Day of GMO-Guidelines Project, Brazilia, Brazil, 14-19 June 2003
- GMO Guidelines Advisory Board Meeting, Bangkok, 28 Feb – 1 March 2003
- 3rd Workshop and Public Day of GMO-Guidelines Project, Ho Chi Minh City, Vietnam, 1-5 April 2004

Presentations of GMO-Guidelines Project at various occasions, including 'Meeting of the Parties' (MOP 1 and 2) of the Cartagena Protocol, Embrapa Headquarters Brazilia, Kenya, Vietnam

Products and Publications of GMO-Guidelines Project: See below in 'List of Publications' and 'Invited Presentations'

OTHER NATIONAL AND INTERNATIONAL PROFESSIONAL ACTIVITIES:

- Member of Expert Group for the European Commission regarding WTO dispute on GMOs
- Member of:
 - Swiss National Biosafety Commission (EFBS)
 - Roster of Experts for Switzerland, Biosafety Clearinghouse, Convention on Biological Diversity (CBD)
 - Roster of Experts for the United Nations Environmental Program (UNEP) Global Environmental Facility (GEF) Scientific and Technical Advisory Panel (STAP)
 - Member of 'Vereinigung Deutscher Wissenschaftler'

- *Invited Expert Hearings by UNEP - CBD, Cartagena Protocol on Biosafety - 1st Meeting of Parties (MOP1);* *FAO Expert Consultation on GMOs in crop production and their effects on the Environment: Methodologies for monitoring and the way ahead.* FAO Headquarters Rome, Italy 18-20 January 2005; *World Health Organisation (WHO), Stakeholder Meeting on WHO draft document 'Modern Biotechnology, Human Health and Development: an Evidence-based Study',* Geneva, Switzerland, 5-6 June, 2003; *The Norwegian Biotechnology Advisory Board, Det Norske Veritas (DNV) and The Norwegian Directorate for Nature Management, Oslo, 3-4 February 2003;* *The German Ministry for Consumer Protection, Food and Agriculture (invited by Minister Künast, BMVEL), 'Discourse Green Gene Technology',* Bad Neuenahr, Germany, 19-20. April 2002; *AGE/AGP Expert Consultation on Status and Risk Assessment of the Use of Transgenic Arthropods in Plant Protection, FAO Headquarters, Rome, Italy, 8-10 April 2002;* *The Swiss Nationalrat WBK, on the new Swiss Gene Technology Law, February 2002, Berne Switzerland;* *The Agriculture Commission of the German Parliament, 8. November 2000, Berlin, Germany;* *The WHO Regional Office for Europe, Seminar "Release of Genetically Modified Organisms in the Environment: is it a Human Health Hazard?" in collaboration with the Italian Government - Italian Environment Protection Agency (ANPA), Rome, ITA, 7-9 September 2000;*

Advisory Committee on Genetic Modification (COGEM) for the Minister of the Environment of the Netherlands. Consultation January 2000; Consensus conference (Publiforum): 'Gene Technology and Nutrition', organized by *TA Technology Assessment (Schweizer Wissenschaftsrat)*, 4-6 June 1999, Berne, Switzerland; *Austrian Federal Chancellery (Österreichisches Bundeskanzleramt)*, presentation on 'Potential agroecological impacts of transgenic Bt-maize on beneficial insects.'

- Consultant to the International Rice Research Institute (IRRI), Los Banos, Philippines (May 1998, 1-month visit). Project: Initiating research project on compatibility of transgenic Bt-rice with biological control agents.
- Consultant and external reviewer for Commission for Environmental Cooperation (CEC) of North America on Article 13 Report 'Maize and Biodiversity: The Effects of Transgenic Maize in Mexico', February 2004.
- Journal reviewer for *Nature*, *Science*, *Environmental Entomology*, *Oekologia*, *Entomologia Experimentalis et Applicata*, *Cellular and Molecular Life Sciences*, *Biological Control*, *Journal of Environmental Quality*, *Journal of Insect Physiology*, *Molecular Ecology*, and others.
- Grant reviewer for the United States Department of Agriculture (USDA), Research Council of Norway, New York University Research Challenge Fund, Österreichische Akademie der Wissenschaften, United Kingdom Biotechnology and Biological Sciences Research Council, United States - Israel Binational Agricultural Research and Development Fund, and others
- Chair and founding member of International Organisation for Biological Control (IOBC) Global Working Group on 'Transgenic organisms in integrated pest management and biological control' (see 'GMO Guidelines Project' above)

Regular News Briefs and Project Updates since 2002

Co-coordinator of the 'GMO-Guidelines Project' on 'Development of International Scientific Environmental Biosafety Testing Guidelines for Transgenic Plants', project of the IOBC global working group 'Transgenic Organisms in IPM and Biocontrol', funded by the Swiss Agency for Development and Cooperation (SDC - DEZA), Berne, Switzerland and UNEP GEF STAP (see above).

▪ **Teaching/Visiting lecturer:**

- **Fallstudie 2005/06 UMNW, ETHZ** - Umwelt Biosicherheit von gentechnisch veränderten Pflanzen
- Departamento de Ciências Florestais, Escola Superior de Agricultura "Luiz de Queiroz" (ESALQ), Sao Paulo University, Brazil. Intensive Course 'Biossegurança com Organismo Geneticamente Modificados Avaliação de Riscos de Impactos Ambientais', April 8-11, 2003
- Guest lecturer 'Risikoanalyse transgener Pflanzen' in Rahmen der Vorlesung 'Gesellschaftlicher Umgang mit aktuellen Umweltrisiken', PD Dr. Daniel Ammann, 8. January und 10. December 2002
- International Centre for Genetic Engineering and Biotechnology (ICGEB) and the United Nations Environment Programme - Global Environment Facility Project on Development of National Biosafety Frameworks (UNEP-GEF), International Workshop on 'Introduction to Biosafety and Risk Assessment for the Environmental Release of Genetically Modified Organisms (GMOs): Theoretical Approach and Scientific Background', Lecturer on 'A Case study: The Green Lacewing Case Example'. Trieste, Italy 3-7 June 2002
- Instituto de Ecología in Xalapa, Mexico. Co-teaching course in 'Problemática de plantas transgénicas y control biológico'. Nov. 24 - Dec. 8, 1999
- University of Berne, Zoology Institute, 1-credit hour graduate course, 'Ecological Aspects of Transgenic Plants', WS 1998/99

SELECTED PUBLICATIONS (only in the field of GMO biosafety science)
Angelika Hilbeck

A) Refereed scientific journal articles/book chapter:

- Rovenska, G., R. Zemek, J.E.U. Schmidt, and **A. Hilbeck**. 2005. Altered host plant preference of *Tetranychus urticae* and prey preference of its predator *Phytoseiulus persimilis* (Acari: Tetranychidae, Phytoseiidae) on transgenic Cry3Bb-eggplants. *Biological Control* 33: 293-300.
- Andow, DA and **A. Hilbeck**. 2004. Science-based risk assessment for non-target effects of transgenic crops. *BioScience* 54(7): 637-649.
- Hilbeck, A.**, K. Nelson D. Andow and E. Underwood. 2004. Problem Formulation and Options Assessment (PFOA) to Assess the Ecological Risks Associated with a GM Crop. In: Breckling, B. and R. Verhoeven (eds.), Risk, Hazard, Damage - Specification of Criteria to Assess Environmental Impact of Genetically Modified Organisms. *Naturschutz und Vielfalt* 1, Bonn, pp 131 - 143.
- Andow, D.A. and **A. Hilbeck**. 2004. Science and Risk Assessment in Developing Countries. *Ecological Frontiers*, Forum Article: 155-156.
- Hilbeck, A.**, D. Andow, A.N.E. Birch, B.B. Bong, D.M.F. Capalbo, G.P. Fitt, E.M.G. Fontes, K.L. Heong, J. Johnston, E.O. Osir, A. Snow, J. Songa, E. Underwood and F-H. Wan. 2004. The GMO Guidelines Project: Development of International Scientific Environmental Biosafety Testing Guidelines for Transgenic Plants. In: L.E. Ehler, R. Sforza and T. Mateille, Genetics, Evolution and Biological Control, CAB International, Oxon, UK, pp 207-218.
- Zwahlen, C., **A. Hilbeck**, P. Gugerli, and W. Nentwig. 2003. Degradation of the Cry1Ab protein within transgenic *Bacillus thuringiensis* corn tissue in the field. *Molecular Ecology* 12: 765-775.
- Zwahlen, C., **A. Hilbeck**, R. Howald, and W. Nentwig. 2003. Effects of transgenic Bt corn litter on the earthworm *Lumbricus terrestris*. *Molecular Ecology* 12: 1077-1086.
- Capalbo, D.M.F., **A. Hilbeck**, D. Andow, A. Snow, B.B. Bong, F-H. Wan, E.M.G. Fontes, E.O. Osir, G.P. Fitt, J. Johnston, J. Songa, K.L. Heong, and A.N.E. Birch. 2003. Brazil and the development of scientific biosafety testing guidelines for transgenic crops. *J. of Invertebrate Pathology* 83: 104-106.
- Hilbeck, A.** and D. Andow. 2003. Data requirements for ecological risk assessment of transgenic plants. In: T. Lelley, E. Balazs, M. Tepfer (eds.), *Ecological Impact of GMO Dissemination in Agro-Ecosystems*, facultas, Vienna, pp. 193-212.
- Hilbeck, A.**, 2002. Transgenic host plant resistance and nontarget effects. In: D. Letourneau and B. Burrows (eds.): *Assessing environmental and human health effects*, CRC Press LLC, Boca Raton, USA, pp 167-185.
- Hilbeck, A.** 2001. Implications of transgenic, insecticidal plants for insect and plant biodiversity. *Perspectives in Plant Ecology, Evolution and Systematics* 4: 43-61.
- Zwahlen, C., W. Nentwig, F. Bigler and **A. Hilbeck**. 2000. Tritrophic interactions of transgenic *Bacillus thuringiensis* corn, *Anaphothrips obscurus* (Thysanoptera: Thripidae), and the predator *Orius majusculus* (Heteroptera: Anthocoridae). *Environmental Entomology* 29: 846-850.
- Meier, M. and **A. Hilbeck**. 2001. Influence of transgenic *Bacillus thuringiensis* corn-fed prey on prey preference of immature *Chrysoperla carnea* (Neuroptera: Chrysopidae). *Basic and Applied Ecology* 2: 35-44.
- Raps, A., Kehr, J., Gugerli, P., Moar, W.J., Bigler, F., and **A. Hilbeck**. Immunological analysis of phloem sap of *Bacillus thuringiensis* corn and of the non-target herbivore *Rhopalosiphum padi* (Homoptera: Aphididae) for presence of Cry1Ab. *Molecular Ecology* 10:525-534.

- Vogt, H., E. Vinuela, A. Bozsik, **A. Hilbeck** and F. Bigler. 2001. Interactions with plant management strategies. In: 'Lacewings in the Crop Environment', P.K. McEwen and T.R. New (eds.), pp. 357-379.
- Hilbeck, A.**, W. Moar, M. Puzsai-Carey, A. Filipini and F. Bigler. 1999. Prey-mediated effects of Cry1Ab toxin and protoxin and Cry2A protoxin on the predator *Chrysoperla carnea* (Neuroptera: Chrysopidae). *Entomologia Experimentalis et Applicata* 91: 305 - 316.
- Hilbeck, A.**, M. Baumgartner, P.M. Fried and F. Bigler. 1998. Effects of transgenic Bt corn-fed prey on immature development of *Chrysoperla carnea* (Neuroptera: Chrysopidae). *Environmental Entomology* 27(2): 480-487.
- Hilbeck, A.**, W. Moar, M. Puzsai-Carey, A. Filipini and F. Bigler. 1998. Toxicity of *Bacillus thuringiensis* Cry1Ab toxin to the predator *Chrysoperla carnea* (Neuroptera: Chrysopidae). *Environmental Entomology* 27 (5): 1255-1263.

Books: Editor/Author (peer-reviewed)

- Hilbeck, A. and D.A. Andow (eds.). 2004. Environmental Risk Assessment of Transgenic Organisms: A Case Study of Bt Maize in Kenya. CABI Publishing, Oxon, UK.**

Chapters in book:

- Andow, D.A. and **A. Hilbeck**. Bt Maize, Risk Assessment and the Kenya Case Study. (Chapter 1)
- Birch, A.N.E., Wheatley, R., Anyango, B., Arpaia, S., Capalbo, D., Getu Degaga, E., Fontes, E., Kalama, P., Lelmen, E., Lövei, G., Melo, I.S., Muyekho, F., Ngi-Song, A., Ochiendo D., Ogwang, J., Pitelli, R., Sétamou, M., Sithanatham, S., Smith, J., Van Von, N., Songa, J.,n Sujii, E., Quang Tan, T., Wan, F.-H., **Hilbeck, A.** Biodiversity and non-target impacts: Case study of Bt-maize in Kenya. (Chapter 5)
- Hilbeck, A.**, D.A. Andow, A.N.E. Birch, G. Fitt, J. Johnston, K. Nelson, E. Osir, J. Songa, E. Underwood and R. Wheatley. Risk Assessment of Bt Maize in Kenya: Synthesis and Recommendations. (Chapter 8)

- Hilbeck, A., E. Fontes and D.A. Andow (eds.). 2005. Environmental Risk Assessment of Transgenic Organisms: A Case Study of Bt Cotton in Brazil. CABI Publishing, Oxon, UK.**

Chapters in book:

- Andow, D.A. and **A. Hilbeck**. Bt Cotton, Risk Assessment and the Brazil Case Study. (Chapter 1)
- Hilbeck, A.**, D.A. Andow, A.N.E. Birch, G. Fitt, J. Johnston, K. Nelson, E. Osir, J. Songa, E. Underwood and R. Wheatley. Nontarget and Biodiversity Assessment: Methodologies and Framework (Chapter 5)
- Andow, D.A., **Hilbeck, A.**, A.N.E. Birch, G. Fitt, J. Johnston, K. Nelson, E. Osir, J. Songa, E. Underwood and R. Wheatley. Risk Assessment of Bt Cotton in Brazil: Synthesis and Recommendations. (Chapter 14)

B) Technical Report

- Raps, A., Hilbeck, A., Bigler, F., Fried P. M. & Messmer, M. 2000. Konzept und praktische Lösungsansätze zur anbaubegleitenden Forschung beim Einsatz transgener Kulturarten. *Nachhaltige Landwirtschaft und grüne Gentechnik* (Hrsg E. Schulte & O. Käppeli), pp. 115-114. Fachstelle für Biosicherheitsforschung und Abschätzung von Technikfolgen des Schwerpunktprogrammes Biotechnologie des Schweizerischen Nationalfonds (BATS), ISBN 3-9521113-2-5.

C) Other significant publications (editorial review)

- Schmidt, J.E.U., C.U. Braun, C. L'Abate, L.P. Whitehouse and A. Hilbeck. 2004. Untersuchungen zu Effekten von *Bacillus thuringiensis*-Toxinen aus transgenen, insektenresistenten Pflanzen auf räuberische Marienkäfer (Coleoptera: Coccinellidae). Mitt. Dtsch. Ges. Allg. Angew. Ent. 14: 419-422.
- Hilbeck, A. and D. Andow 2003. Data requirements for ecological risk assessment of transgenic plants. In: T. Lelley, E. Balázs and M. Tepfer (eds.), Ecological impact of GMO dissemination in agro-ecosystems. Proceedings of an international OECD workshop in Grossrussbach, Austria, pp. 193-212, Facultas Verlags- und Buchhandels AG, Vienna, Austria.
- Hilbeck, A. 2002. Transgenic crops and integrated pest management. In: Proceedings of an international conference of the British Crop Protection Council 'Pests and Diseases', 18-21 November, Brighton, United Kingdom.
- Hilbeck, A. Nontarget food chain effects and the GMO-Guidelines Project. In: LMOs and the Environment. Proceedings of an International Conference, November 27-30, 2001(2002) (Ed.), Craig R. Roseland, Organization for Economic Cooperation and Development (OECD), Paris, France.
- Hilbeck, A. and F. Bigler. 1999. Long term questions related to agroecological effects of transgenic Bt crops. In: K. Ammann et al. (Eds.), Methods for risk assessment of transgenic plants. Vol. III: Ecological risks and prospects of transgenic plants: Where do we go from here? A dialogue between biotech industry and science. Birkhäuser Verlag, Basel, ISBN 3-7643-5917-X, pp. 77-81.
- Hilbeck, A. Effects of *Bacillus thuringiensis* on insect natural enemies. Proceedings 5th International Symposium on the biosafety results of field tests of genetically modified plants and microorganisms, September 1998, Braunschweig, Germany.
- Hilbeck, A. Potential agroecological effects of transgenic Bt - corn on natural enemies (Potentielle agrarökologische Auswirkungen von transgenem Bt-Mais auf Nützlinge). Proceedings meeting organized by Austrian Federal Chancellery (Österreichisches Bundeskanzleramt), June 1998, Vienna, Austria
- Hilbeck, A. and F. Bigler. 1997. Risk assessment research regarding compatibility of transgenic Bt-corn and natural enemies (Risikoforschung zur Nützlingsverträglichkeit von transgenem Bt-Mais). Focus Biosicherheit 2: 4.

INVITED PRESENTATIONS (only as main and presenting author since 1998)

Angelika Hilbeck

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- Hilbeck, A. 2004. The GMO Guidelines Project - Developing the science in risk assessment of transgenic plants. XXII International Congress of Entomology, Brisbane, Australia, 15-21 August
- Hilbeck, A., D. Andow, E. Underwood and K. Nelson. 2003. An Ecologist's Use of Problem Formulation and Options Assessment (PFOA) - to guide the development of criteria for pre-release risk assessment. International conference on 'Risk, Hazard, Damage - Specification of criteria to assess environmental impact of genetically modified organisms', Hannover, Germany, 8-9 December
- Hilbeck, A. and D. Andow. 2003. The GMO Guidelines Project. IOBC/WPRS International Meeting, Praha, Czech Republic, 26-29 November
- Hilbeck, A., and D. Andow. 2003. Evaluation of the impact of genetically modified crops on non-target organisms. Siconbiol - Simposio de Controle Biologico, Sao Pedro/SP, Brazil, 22-26 July
- Hilbeck, A. 2003. Coexistence of GM- and non-GM farming: Challenges across international borders. European Union - Roundtable Discussion, Brussels, Belgium, 24 April
- Hilbeck, A. 2002. Transgenic crops and IPM. Brighton Crop Protection Council, Pests and Diseases, Brighton, United Kingdom, 18-21 November

- Hilbeck, A. 2002. Data requirements for transgenic plants. OECD workshop on Dissemination of GMOs in Agro-ecosystems, Grossrussbach, Austria, 27-28 September
- Hilbeck, A., Weber, E. and M. Meier, 2001. Transgene flow: Biodiversity and nontarget implications. ESF Scientific Programme: Assessment of the Impacts of Genetically Modified Plants (AIGM); Risk Assessment Methods for Genetically Modified Plants - Current trends and new developments, Ceské Budejovice, Czech Republic, 13-15 September
- Hilbeck, A. 2001. Nontarget food chain effects and the GMO-Guidelines Project. LMOs and the Environment, an International Conference of the Organization for Economic Cooperation and Development (OECD), Raleigh, USA, November 27-30
- Hilbeck, A. and M. Meier. 2001. The Guidelines Project of the IOBC Global Working Group and Risk Assessment of Transgenic Arthropods. AGE/AGP Expert Consultation on Status and Risk Assessment of the Use of Transgenic Arthropods in Plant Protection, FAO Headquarters, Rome, Italy, 1-5 October
- Hilbeck, A. 2001. Ecological implications of transgenic insecticidal plants: An option for sustainable agriculture? Gordon Conference on 'Plant-Herbivore Interactions', Ventura, California, USA, February 25 – March 2
- Hilbeck, A. 2000. Ecological issues affecting appropriate utilization of transgenic plants. Key note lecture, XXI International Congress of Entomology, Iguassu Falls, Brasil.
- Hilbeck, A. 2000. Workshop 'Transatlantic Biotechnology Initiative', German Marshall Fund of the United States, 6-8 July, Washington, DC, USA.
- Hilbeck, A. 2000. Ecology and transgenic plants. World Congress of Invitro Biology, 11-16 June, San Diego, USA.
- Hilbeck, A. 2000. International scientific workshop 'The ecological impacts of transgenic crops' co-sponsored by the Institute for Food and Development Policy (Food First) and the Center of Biological Control (organizer) at UC Berkeley, March 2-4, University of California Berkeley, USA.
- Hilbeck, A. 2000. Seminar and visit: 'Transgenic Bt plants and natural enemies', Max Planck Institute for Molecular Plant Physiology, April 26, Golm/Potsdam, Germany.
- Hilbeck, A. 2000. Workshop: The wider environmental implications of genetically modified plants. Session: Pest Resistance Impacts. Sponsored by European Science Foundation program 'Assessing the impacts of genetically modified plants (AIGM)', Cambridge, UK, 20-21 January.
- Hilbeck, A. 1999. Ökologische Implikationen von transgenen Bt-Pflanzen auf die Nahrungskette im Agrarraum: Fallbeispiel die Grüne Florfliege, Robert Koch Institut, Zentrum für Gentechnologie, Berlin, Deutschland, 30. August.
- Hilbeck, A. 1999. Bt-crops and their effect on non-target organisms – a story unfolds. Annual Meeting of the Society for Invertebrate Pathology (symposium presentation), Irvine, California, USA, August 22 - 27.
- Hilbeck, A. 1999. Agroecological aspects of transgenic insect-resistant plants. Opening statements and podium discussion on 'Biotechnology and Entomology', Internationale Entomologen Tagung, 14 – 19 March, Basle, Switzerland.
- Hilbeck, A. 1998. Effects of *Bacillus thuringiensis* on insect natural enemies. 5th International Symposium on the biosafety results of field tests of genetically modified plants and microorganisms, September, Braunschweig, Germany.
- Hilbeck, A. and F. Bigler. 1998. Long-term questions related to agroecological effects of transgenic Bt crops. Proceedings International Conference 'Ecological risks and prospects of transgenic plants, where do we go from here?', January 29-31, Berne, Switzerland.