

## OBITUARY: A LIFE DEVOTED TO BEE PROTECTION: THE LEGACY OF PIETER OOMEN

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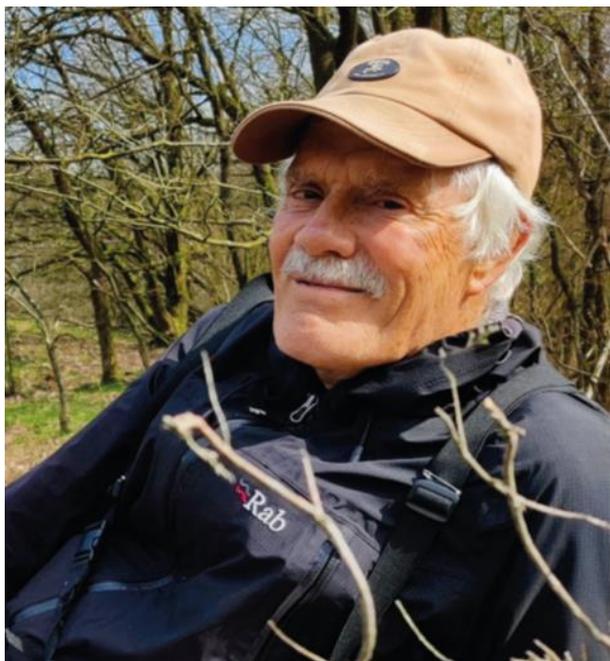
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**Text**—Dr. Pieter Oomen, born in 1946, a prominent and inspirational scientist in many areas of the biosafety of pesticides, most notably ecotoxicology, regulatory, risk assessment and bioassays, passed away peacefully on 19th of January 2024. His efforts have had a great and long-lasting impact on bee risk assessment and have improved bee protection.

Pieter Oomen worked in the Netherlands Plant Protection Service since 1982. Pieter made major contributions to regulatory testing and risk assessments for honey bees and other non-target arthropods during his long career, and he published widely on effects of pesticides on both bees and other non-target arthropods/beneficials through the International Commission on Plant-Pollinator Interactions (ICP-PR) and the International Organisation for Biological Control (IOBC). Many of his articles continue to be widely cited due to the high standard of his work and they have informed integrated pest management (IPM) strategies globally. For example, during his active research days, he led the development of the “Oomen test”, examining side-effects on bee larvae from insect growth regulators (IGRs; Oomen et al. 1992). This test has been in use in risk assessment in many parts of the world and was also the basis of the honey bee colony-level test described in the Organization for Economic Cooperation and Development (OECD) Guidance Document 75 (adopted in 2007). Since its creation, the “Oomen test” has only been slightly amended and is still

being utilised, in recently updated risk assessment schemes.

Furthermore, Pieter was key in the harmonization of laboratory acute toxicity test methods for honey bees. He developed the first risk assessment scheme for bees, specifically the Hazard Quotient (HQ) approach titled “A Sequential Scheme for Evaluating the Hazard of Pesticides to Bees *Apis mellifera*” (Oomen 1986). This approach was the first to link laboratory and semi-field/field effects with field exposure (application rate) for any organism and was the only one validated by incident data. The approach served as the basis of many risk assessment schemes globally. The HQ approach is still used today in some regions (e.g., the ANDEAN Technical Manual). This HQ approach was first discussed at the first ICP-PR meeting in 1985 at Rothamsted, and Pieter ensured that the approach was acceptable to all at the 1990 meeting using his customary diplomacy. Pieter was also key in establishing a “NL Honeybee Incident” reporting approach (Oomen 1999) and linking it with similar schemes in the UK and Germany to ensure rapid



**Pieter Oomen (1946-2024)** Photo: Françoise Oomen-Kalsbeek

alert of issues arising from pesticide use. From 1993 onwards, he led a sub-group on residue/persistence testing, was vice-chairman from 1996 to 2002, and from 2002 to 2011 president of the ICP-PR's Bee Protection Group.

Pieter also edited several of the Proceedings of the ICP-PR Bees and Pesticides meetings. However, his contributions were not limited to technical input, with his typical diplomacy and drive, and Pieter led the European Plant Protection Organization (EPPO)/Council of the Europe (CoE) Honeybees subgroup tasked with evaluating testing and the approaches to assessing the risk of pesticides to bees. This resulted in one of the most developed risk assessment schemes and the first to be finalized for environmental risk assessment in 1992. This risk assessment scheme formed the basis of the European Union (EU) requirements in this area (Council Directive 91/414/EEC). In addition, he led the agreement of the methodologies outlined in EPPO/CoE guideline 170 that provided a tiered framework for risk assessment (OEPP/EPPO 2001, 2003). He did not consider this "job done" and continued with his diplomatic and technical involvement throughout the 1990's and 2000's, including through increased integration with the work of the ICPPR.

Nevertheless, there were many further topics in which he was involved beyond bees, such as extensive work overseas with the Food and Agriculture Organisation of the United Nations (FAO) and also twinning projects in the EU in Turkey and Romania.

Pieter was a great and inspiring person and he set good examples in his professional, passionate way to work, but also in his charming, friendly, diplomatic, open and interested persona. In his private life, one of his main hobbies was bird watching, and after retirement he remained active in conservation, including taking over roles such as chairman of the board of KNNV, the Royal Netherlands Union for Field Biology.

While we will miss a very warm and brilliant person; his many contributions to science and our ability to detect and mitigate risks to the environment remain. Our deepest condolences and warmest thoughts go to his very supportive wife, Françoise Oomen-Kalsbeek, who was often present at ICPPR meetings and a valued guest, and their children.

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