

Bleker and the Bees

In the same week that the journal 'Science' published two alarming studies linking neonicotinoid pesticides to global bee deaths, Henk Bleker (Dutch Secretary of State for Agriculture) sent the Dutch Parliament a report to the effect that 'nothing is wrong – carry on using the neonicotinoids, they don't kill bees'.

By Tomas Vanheste

Life is not easy for Henk Bleker. Last week, in a heated Parliamentary debate over the cause of the mass-death of bees around the world, he thought he had given a final reassurance that there was no cause for alarm over the pesticides issue. Scientists, environmentalists, politicians and beekeepers are at each other's throats over whether the cause of this are the systemic pesticides, called 'neonicotinoids'. The fact that millions of bee colonies have died in Europe and America worries the Dutch Secretary of Agriculture; because without bees there can be no pollination of crops such as carrots, tomatoes and cauliflowers. Bleker commissioned a team of scientists to investigate the problem. Last Wednesday, he delivered a reassuring message to the Chamber: his scientific advisers had studied the literature and found 'no evidence of a link between bee mortality and neonicotinoids'. So there was no reason to stop using these pesticides. Bleker was happy, the farmers were happy and the pesticide manufacturers were happy. But the ink on his letter was scarcely dry before the leading journal 'Science' published two new studies confirming that neonicotinoids do indeed cause serious damage to bees. One French study fitted honeybees with a radio tracking chip and then exposed them to realistic field-doses of the pesticide 'Cruiser' (thiamethoxam) developed by Syngenta. The bees which consumed the neurotoxin had more difficulty finding their way home to the hive and were more likely to get lost and die en-route. The other study from Stirling University in Scotland, exposed bumblebees to very low doses of the neonicotinoid Imidacloprid, produced by Bayer. The exposed colonies suffered an 85% drop in the number of queens they produced. The loss of 85% of new queens would result in 85% fewer bumblebee colonies in the following year.

Did the revelations from Science come completely 'out of the blue', or should Bleker's pesticide-advisers have been better informed? Just who are these experts on which the State apparently relies? The first author of the report on which Bleker based his message was Tjeerd Blacquière of Wageningen Plant Research International (PRI). He was a bold choice for the Secretary of State. Blacquière's credibility was all but destroyed after his starring-role in the TV documentary "The murder of the honeybee" transmitted by Holland's Zembla TV in March 2011. Blacquière, who claimed to be the bee expert at Wageningen University, was forced to admit he had not published any article on the bees and pesticides issue in any peer reviewed scientific journal.

"We do very practical research," was his explanation. He described PRI as "a research company" with loose ties to the university, generating income from commissioned research studies.

However, the research bureau Profundo reported to Zembla that Blacquière's institute had in fact received many lucrative projects from the pesticide manufacturers Bayer and Syngenta.

The second expert author consulted by the government was Ghent University Professor Guy Smaghe; but he is also closely linked with Bayer. His research team in Ghent cooperates with the largest Bayer research center in Belgium and is even located on the same campus. Smaghe has also co-published a paper with a scientist employed directly by the German chemical giant.

"I've never done research for Bayer," Blacquière says in a response. "We have a government that says that universities should work together with industry. Citizens complain when researchers work at the expense of the taxpayer all their lives on a topic which brings no benefits to society. But once we do something with Bayer and Syngenta, they say: See, they are not independent!"

Until 2011 Blacquière had not published a single peer-reviewed study on bees and pesticides. He made his debut in bee-science with the paper published last February in the journal 'Ecotoxicology', which formed the basis of the report that the Secretary of State sent to the Parliament. But that paper was not greeted with cheers in all circles. Toxicologist Henk Tennekes, (formerly the director of a large Swiss agency performing research for industry and now an independent researcher), labelled Blacquière's paper as "a travesty of scientific integrity", because it deliberately ignored authoritative literature that had long demonstrated adverse effects of neonicotinoids on bees. Tennekes filed a formal complaint against Blacquière but the Executive Board of Wageningen University declared Tennekes' complaint unfounded last week, following an investigation by two professors. They judged that the scientific studies which, according to Tennekes, the authors have ignored, were either 'not essential' or were not peer-reviewed.

This is a specious argument, according to Tennekes. One of the publications they omitted and ignored was the 2003 report by the French government's 'Scientific and Technical Committee' that led to a ban on Imidacloprid in that country. "Are National Health Council government reports ever peer reviewed? Should we ignore them because they are not academically reviewed?" Tennekes also says he does not understand: why his own articles which criticize present toxicological risk assessment, were not included; nor were those by the Australian researcher Francisco Sanchez-Bayo included. Tennekes and Sanchez-Bayo both conclude that prolonged uptake of neonicotinoid insecticides can be very harmful to bees, even at infinitesimally small doses.

“For these neurotoxic poisons, there really is no safe dose”, says Tennekes. "Neonicotinoids have contaminated the fields and water ditches of Holland's flower-bulb-growing region, at levels which far exceed the acceptable limits, by a factor of thousands. We are not just dealing with the poisoning of bees, but of all insects and invertebrate life in general. These make up the base of the food-pyramid which supports all insectivorous birds, amphibians and mammals such as: skylarks, frogs, shrews and hedgehogs. If that insect-food-pyramid collapses, we have an environmental disaster in the making "

Sanchez-Bayo and Tennekes wrote a review article that is also omitted from the bibliography of Blacquièrè. The Australian toxicologist also pointed to a schoolboy-level scientific error in the report by Blacquièrè et al. “Their report to the Dutch government states that neonicotinoids are 'antagonists'; substances that attach themselves to the neural receptors but do not activate them. In fact it is widely known that neonicotinoids are 'agonists' which activate neural receptors in bee brains; which is precisely what makes them so dangerous”.

Blacquièrè retorted that his was just "a slip of the pen”.

Despite this catalogue of scientific errors and deliberate omissions, the judgement of Wageningen University was that: “nothing is wrong” with Blacquièrè's report. But it is unfortunate that Wageningen's 'scientific integrity counsellor', in addition to being one of the professors who reviewed Tennekes' complaint, also wrote seven articles with one of the co-authors of the article in question. Any negative judgement of Blacquièrè's integrity would have also cast doubt on the credibility of someone with whom he had often collaborated.

Jeroen van der Sluijs, Assistant Professor of New Risks at Utrecht University and a visiting professor at Versailles, refuses to comment on the scientific integrity of Blacquièrè and his co-authors. ***"I would prefer to talk about the content of the study,"*** he says. But he agrees with Tennekes that crucial studies were ignored, omitted or not properly evaluated. He had already communicated this to Bleker last Autumn, and copied his criticisms to the Parliament, when he first saw the final draft. He wrote that the study contains:

- "a series of omissions," . . . furthermore it
- "does not meet the basic general requirements of good scientific practice"

. . . finally the report

- "gets it completely wrong" . . when it comes to chronic toxicity and damage to bee health.

The final version of the report which the Secretary of State sent to the House has not changed his mind at all. "My main criticism is that they assess the risks only by

looking at acute, lethal toxicity," says Van der Sluijs. "But everybody agrees that massive acute mortality among bees occurs primarily during the Spring-sowing of maize, because of the toxic dust particles which are released; this happened last year in Slovenia when a hundred million bees died of neonicotinoid poisoning. The high winter bee-mortality is a different story. Here, we see the effects of prolonged exposure to a dose of neonicotinoids that is not immediately fatal, but which makes the bees more susceptible to diseases. "The authors assessed the risks using a completely outdated methodology", says the Utrecht Risk Scientist. "The correct methodology is obvious: you should compare the lowest adverse-effect-dose in the laboratory with the actual dose of pesticide that the bees encounter in the field. If the field-dose is higher, the stuff is not safe. "

This is clearly evident from the data which the authors themselves present; blatantly obvious. But they simply brush the lab results aside with a wave of the hand. In their article they acknowledge wholeheartedly that "many laboratory studies' demonstrate harmful effects on the foraging behavior, as well as the learning ability and memory capacity of bees. But they then obscure this judgement with a smokescreen, by claiming that these effects have not been found in field studies, and they take that as the measure of things.

The few field studies which they then cite to justify their position are "totally unacceptable in design ", in the judgement of Van der Sluijs. Consider the 2007 field trial designed by Canadian researchers Christopher Cutler and Synthia Scott-Dupree. In this study, just eight beehives were placed in two small fields of oilseed rape flowers; one field was treated with clothianidin – a neonicotinoid insecticide; the other field of flowers was untreated. But the control and test fields of yellow rapeseed (canola) were less than three hundred meters apart. No wonder there was little difference between mortality in the control and test-colonies, because it is normal for bees to forage over a radius of up to two miles, covering thousands of acres in their search for pollen and nectar; so naturally the bees collected food in both treated and untreated fields.

But Blacquière denies this. "Bees are not crazy, they won't travel far at all because they are economical with their energy. If they are in the middle of a rape field, they stay there and they hardly go anywhere else." Despite this, the American Environmental Protection Agency, itself classified the study in November 2010 as 'invalid'.

In addition, according to the website of the University of Guelph, researchers Cutler and Scott-Dupree received over \$130,000 from Bayer for conducting their study. They failed to mention this large payment in their article, which reassured everyone that neonicotinoids are 'safe for bees'. Blacquière remains silent in his report on this financial sponsorship as well as on the damning judgment of the EPA. "We only

looked at refereed articles," he explains. "The judgment of the American Environmental Protection Agency is only an opinion, it gives no data. As far as I am concerned the EPA condemned themselves with that pathetic excuse.

Without any reservation, Blacquière and his co-authors referred to the 'invalid study' by Cutler and Scott-Dupree no less than seventeen times. "It is bizarre and irresponsible for any researcher to rely so strongly on a weak and controversial study," says Van der Sluijs.

Would Blacquière have given Bleker different advice if he had known about the two new studies reported in Science? Blacquière says he would not have changed his report: "It is important research because these studies bridge the gap between the lab and the field. But the claim, accepted by some people, that it is unequivocally clear that these pesticides are the cause of bee mortality, is weak. During the two weeks that bumble bees were exposed to neonicotinoids in the lab in Scotland, they could not access the beautiful flowers, whereas in Nature, out in the field, they could. It is clearly a worst-case scenario. In the other French study, they fed the bees a dosage of neonicotinoids ten times as high as that normally measured in the pollen and nectar in the field. "

Henk Bleker thought to get his way about the Hedwigepolder issue by relying on two professors, who were not in fact professors, and when this newspaper questioned them they did not support Bleker's position. This time he thinks to calm tempers by waving a report put together by a commercially-minded first-author with a modest list of publications. Does the Napoleon of Vlagtwedde really think he can triumph, not only over Europe but also over Science journal? "