



PPS-jaarrapportage 2018

De PPS-en die van start zijn gegaan onder aansturing van de topsectoren dienen jaarlijks te rapporteren over de inhoudelijke en financiële voortgang. Voor de inhoudelijke voortgang dient dit format gebruikt te worden. Voor PPS-en die in 2018 zijn afgerond is een apart format "PPS-eindrapportage" beschikbaar.

De jaarrapportages worden integraal gepubliceerd op de websites van de TKI's/topsector. Zorg er s.v.p. voor dat er geen vertrouwelijke zaken in de rapportage staat.

Algemene gegevens	
PPS-nummer	AF-15220
Titel	Controlling the safety of insects for feed & food
Thema	Voedselveiligheid (BO-46 AF-GV – Gezonde en veilige producten)
Uitvoerende kennisinstelling(en)	RIKILT Wageningen University & Research
Projectleider onderzoek (naam + emailadres)	HJ van der Fels-Klerx, ine.vanderfels@wur.nl
Penvoerder (namens private partijen)	Bart de Ruiter, Protifarm RD BV
Contactpersoon overheid	Marjan van Creij (M.G.M.vanCreij@minez.nl)
Totale projectomvang (k€)	472.7 k€ excl. VAT (all years)
Adres projectwebsite	http://www.wur.nl/en/project/Insure-the-safety-of-insects.htm http://www.wur.nl/nl/project/Borgen-van-de-veiligheid-van-insecten-1.htm
Startdatum	01-01-2016
Einddatum	31-12-2019

Goedkeuring penvoerder/consortium

De jaarrapportage dient te worden besproken met de penvoerder/het consortium. De TKI's nemen graag kennis van eventuele opmerkingen over de jaarrapportage.

De penvoerder heeft namens het consortium de jaarrapportage	<input checked="" type="checkbox"/> goedgekeurd <input type="checkbox"/> niet goedgekeurd
Eventuele opmerkingen over de jaarrapportage:	none

Planning en voortgang (indien er wijzigingen zijn t.o.v. het projectplan svp toelichten)

Loopt de PPS volgens planning?	Yes
Zijn er wijzigingen in het consortium/de projectpartners?	No
Is er sprake van vertraging en/of uitgestelde opleverdatum?	No
Is er sprake van inhoudelijke knelpunten, geef een korte beschrijving	No
Is er sprake van afwijkingen van het ingezette budget/de begroting?	No

Korte omschrijving inhoud/doel PPS

Wat is er aan de hand en wat doet het project daaraan?

Wat gaat het project opleveren en wat is het effect hiervan?

Nowadays, in Europe, insects are increasingly gaining interest as an alternative source of proteins (and also fat) in animal feed and human food production. As for every other feed/food ingredient and product, its safety for the consumer should be guaranteed. To date, little information is available on the safety of the use of insects for feed and food. This project fill (part of) this gap in knowledge. Results will be very useful for industry, including insect producers and processing companies for feed and food, such to be able to control the safety of their product. It will in this way stimulate economic activities of such companies in the Netherlands, and enhance their market share of insect products. The project will contribute to the safe use of this alternative source of protein for animal and human consumption. For consumers, this will lead to the availability of feed and food products, made from an alternative source of proteins. It will in this way contribute to sustainability of feed and food production and consumption in Europe.

Aim of the project: To obtain more insights into the safety of the use of insects in feed and food production. The project will focus on the possible microbiological and chemical contamination of insects and their products, from different sources of substrate. The results of the project will lead to more insights in the safe use of insects for feed and food as well as potential safety problems. Industry needs these results for even better ensuring the safety of their products and ingredients.

Resultaten 2018

Geef een korte beschrijving van de high-lights van 2018

Geef een korte beschrijving van de projectdeliverables 2018

In 2018, we prepared and started a large experiment into the potential accumulation of various pesticides from the substrates into Black Soldier Fly (BSF) larvae. Pesticides to be considered in this experiment were selected based on pre-defined criteria, as well as the concentration of the particular pesticide. In total 10 different pesticide treatments were selected, and 3 controls were added. The experimental design was developed and clearly described. It included 4 replicates per treatment.

The experiment itself was held at Bestico, one of the partners in the project, at the end of 2018. Normal substrate used at Bestico was sent to RIKILT, where it was spiked with the 10 different pesticides (individual treatment). BSF were reared on the spiked substrates at Bestico. Growth and survival of BSF was recorded. After harvest of the BSF larvae, the larvae and the residual material of three replicates per treatment were sent to RIKILT for chemical analyses of pesticide residues. Larvae of the remaining replicate per treatment were sent to WU-Entomology for further investigation of effect of pesticides on growth and reproduction.

The larvae at RIKILT were chemically analysed by end of 2018 (NAPRO budget). The remaining of the analyses will be done in the first quarter of 2019. These include the duplicate analyses of the larvae as well as analyses of the residual materials.

First results showed varying effects of the pesticides on growth and survival of the BSF larvae; most pesticide treatment are reduced larval growth or had no effect, however, one pesticide treatment even increased larval growth.

Furthermore, in 2018 the remaining chemical analysis from the 2017 experiment (return supermarkets) were done, and the scientific paper was further worked out.

Two more scientific papers were finished, submitted and published in 2018.

Furthermore, two discussion meetings with the Ministry LNV were held.

Aantal opgeleverde producten in 2018 (geef in een bijlage de titels en/of omschrijvingen van de producten of een link naar de producten op de projectwebsite of andere openbare websites)

Wetenschappelijke artikelen	Rapporten	Artikelen in vakbladen	Inleidingen/workshops
2	0	0	5

Titels/omschrijvingen van belangrijkste producten in 2018 (max. 5) en hun doelgroepen

1. Paper on the mycotoxin experiment submitted and published – scientific audience
2. Literature review paper on insect safety submitted and published – scientific audience
3. Oral presentation on insect safety during EAAP meeting, section insects – scientific and industrial audience

4. Oral presentation on mycotoxins and heavy metals during Insect symposium held in Ede 2018 – scientific and industrial audience
5. Oral presentation on mycotoxins during mycotoxin forum meeting – scientific and industrial audience.

See full references below.

6. Lecture on insect safety during insect course of Wageningen University – MSc students
7. Lecture on insect safety during summer school of Wageningen University – industrial and scientific post-graduates.

Bijlage: Titels/omschrijvingen van alle producten in 2018 of een link naar deze producten op de projectwebsite of andere publieke websites

1. Camenzuli L, Van Dam R, De Rijk TC, Andriessen R, Van Schelt J, Van der Fels-Klerx HJ. 2018. Tolerance and excretion of the mycotoxins aflatoxin B₁, zearalenone, deoxynivalenol, and ochratoxin A by *Alphitobius diaperinus* and *Hermetia illucens* from contaminated substrates. *Toxins* 10(2): 91.
2. Van der Fels-Klerx HJ, Camenzuli L, Belluco S, Meijer N, Ricci A. 2018. Food safety issues related to uses of insects for feeds and foods. *Comprehensive Reviews in Food Science and Food Safety* 17(5): 1172- 1183. DOI: 10.1111/1541-4337.12385.
3. Van der Fels-Klerx HJ. 2018. Safety of insects for use in feed, Oral presentation at the 69th annual meeting of the European Federation Animal Sciences, held 27-31 August, Croatia. Key-note lecture.
4. Van der Fels-Klerx HJ. 2018. Heavy metal and mycotoxin accumulation and excretion in insects for feed and food. Oral presentation at Symposium Edible Insects: The Value Chain, 21-22 March, Ede-Wageningen, The Netherlands. Invited speaker.
5. Camenzuli L, Andriessen R, Van Schelt, De Rijk TC, Van dam R, Van der Fels-Klerx HJ. 2018. Tolerance of feed regulated mycotoxins by lesser mealworm and black soldier fly from artificially contaminated substrates. World Mycotoxin Forum 2018, held March 2018, Amsterdam, the Netherlands.