2018-jaarrapportage EU cofinanciering en overige projecten anders dan PPS-en
Over de projecten dient een inhoudelijke en financiële jaarrapportage te worden opgesteld. Voor de inhoudelijke rapportage dient dit format gebruikt te worden. Deze rapportage dient uiterlijk 1 maart 2019 aangeleverd te zijn bij het TKI-bureau. Voor Wageningen Research geschiedt dit via een centraal punt.

Algemene gegevens	
TKI-Nummer	AF-EU-16010
Titel	AF-EU-16010 MycoKey
Projectleider WR (e-mail adres)	Cees Waalwijk (cees.waalwijk@wur.nl)
Adres project website	EU site: http://www.mycokey.eu/ PSG site:https://www.wur.nl/nl/Onderzoek-Resultaten/Onderzoeksprojecten-LNV/Expertisegebieden/kennisonline/MycoKey-2.htm
startdatum	01-04-2016
einddatum	31-03-2020

Korte beschrijving / doelstelling van het project (deze informatie kan worden gepubliceerd op de website van TKI's/Topsectoren

WP2:
- monitoring van toxine-producerende schimmels m.b.v. on site detectie;
- opkomst van nieuwe risico's m.b.v. next-gen sequencing

WP7:
- ontwikkeling van een smartphone-app, waarmee boeren direct advies kunnen ontvangen over te nemen maatregelen, om mycotoxine niveau in hun gewassen te verminderen.

Planning en voortgang Loopt het project volgens planning? Indien er wijzigingen zijn t.o.v. de plannen of indien er knelpunten zijn, geef hierop dan een toelichting

Project loopt volgens planning. De achterstand die in 2017 werd gerapporteerd, is in dit jaar ingehaald.

Highlights en resultaten in 2018/tot nu toe (deze informatie kan worden gepubliceerd op de website van TKI's/Topsectoren

WP2:
- Linkage with other DNA barcoding activities has been achieved through the collaboration with *Westerdijk Fungal Biodiversity Institute.* Available sequence data among the beneficiaries will be merged in the *Fusarium* and *Aspergillus/Penicillium* dBases and they will be publically available for interactive on-line identification of fungal species.
- Four LAMP assays have been developed for detection of *Fusarium* species that produce fumonisins as well as for trichothecenes-producing *Fusarium* spp.
- Whole genome sequences were generated for 2 *F. proliferatum* isolates. The comparative analyses of genomes, newly generated and publically available, was done in collaboration with H2020 partner in Italy on whole genomes, the FUM-gene cluster and related ability to produce fumonisins.
- Two gapless genomes of *F. subglutinans* and *F. temperatum* were assembled.
- Eight genomic datasets from the public domain were collected and analyzed to obtain an overview of the specialized metabolite coding potential across the genus *Fusarium*.
- A proof of concept of the use of environmental on site sensors for weather variables was established.
- A DON and AFLA web-service was linked to the GPS location and the weather data using json-formats. The data requests have been tested and validated on the local servers of UGent

WP7:

- An app was generated that allows the prediction of the amount of mycotoxin in wheat and maize produce (at harvest time). This app named "MycoKey app" allows prediction of the amount of DON in wheat and the amount of aflatoxin and fumonisin in maize. The MycoKey app is integrated in the Akkerweb platform that was previously generated by Wageningen-UR. Two new parts were developed (i) General information on mycotoxin risks and a description on Good Agricultural Practices (GAP) and Good Manufacturing Practices (GMP). (ii) real-time and location specific information on mycotoxin risks applying available mycotoxin risk models with the possibility to use available data. Storage and retrieval of relevant data such as images on the developmental stage of the crop, the crop health status, or on site available data on the presence of toxins or toxigenic fungi was integrated in a companion app.

Aantal opgeleverde producten in 2018/tot nu toe (geef in een bijlage de titels en/of omschrijving van de producten of een link naar de producten op openbare websites)			
Wetenschappelijke artikelen	Rapporten	Artikelen in vakbladen	Inleidingen/ workshops/ invited lectures
6	2		3

Bijlage: Titels van de producten of een link naar de producten op een openbare website
Wetenschappelijke publicaties:

- Brankovics, B, Kulik, T, Sawicki, J, Bilska, K, Zhang, H, de Hoog, GS, van der Lee, TAJ, Waalwijk, C, van Diepeningen, AD. 2018. First steps towards mitochondrial pan-genomics: detailed analysis of *Fusarium graminearum* mitogenomes. PeerJ **6**:e5963
- Hoogendoorn, K, Barra, L, Waalwijk, C, Dickschat, JS, van der Lee, TAJ and Medema, MH. 2018. Evolution and Diversity of Biosynthetic Gene Clusters in *Fusarium*. Front. Microbiol. **9**:1158
- Kong, X, van Diepeningen, AD, van der Lee, TAJ, Waalwijk, C, Xu, J, Xu, J, Zhang, H, Chen, W and Feng, J. 2018. The *Fusarium graminearum* Histone Acetyltransferases Are Important for Morphogenesis, DON Biosynthesis, and Pathogenicity. Front. Microbiol. **9**: 654.
- Leslie, JF, Lattanzio, V, Audenaert , K, Battilani, P, Cary, J, Chulze, SN, De Saeger , S, Gerardino, A, Karlovsky, P, Liao, YC, Maragos, CM, Meca, G, Medina, A, Moretti, A, Munkvold, G, Mulè, G, Njobeh, P, Pecorelli, I, Perrone, G, Pietri, A, Palazzini, JM, Proctor, RH, Rahayu, ES, Ramírez, ML, Samson, R, Stroka, J, Sulyok , M, Sumarah, M, Waalwijk, C, Zhang, Q, Zhang, H and Logrieco, AF. 2018. MycoKey Round Table Discussions of Future Directions in Research on Chemical Detection Methods, Genetics and Biodiversity of Mycotoxins. Toxins **10**: 109
- Waalwijk, C, Taga, M, Zheng SL, Proctor RH, Vaughan, MM and O'Donnell, K. 2018. Karyotype evolution in *Fusarium*. IMA Fungus **9**: 13-26
- Yang, M, Zhang, H, Kong, X, van der Lee, T, Waalwijk, C, van Diepeningen, A, Xu, J, Xu, J, Chen, WQ and Feng, J. 2018. Host and Cropping System Shape the *Fusarium* Population: 3ADON-Producers Are Ubiquitous in Wheat Whereas NIV-Producers Are More Prevalent in Rice. Toxins **10**: 115

Presentations:

- Van der Lee, TAJ. 2018. Rapid and reliable tools for on-site detection and monitoring of toxigenic fungi. MycoKey Technological Workshop, May 23-24, 2018, Helsinki, Finland
- Van der Lee, TAJ. 2018. The MycoKey app: an ICT solution to facilitate mitigation of mycotoxin risks. MycoKey Technological Workshop, May 23-24, 2018, Helsinki, Finland.
- Van der Lee, TAJ. 2018. MycoKey app: an ICT solution to facilitate mitigation of mycotoxin risks. 2nd MycoKey International Conference: Integrated Solutions for Mycotoxin Management. Wuhan, China, September 15-18, 2018.

Rapporten:

- Yang, M and Rybecky, A. 2018. Loop-mediated isothermal amplification (LAMP) assays to detect *Fusarium poae.* (Report from a Mycokey short term scientific mission)

Abstracts:

- Brankovics, B, Waalwijk, C, Van der Lee, TAJ, De Hoog, GS and Van Diepeningen, AD. 2018. Mitochondrial genomes and species boundaries in the genus *Fusarium*. Med Mycol. **56**: S11-S11