



General information	
PPP-number	AF17010
Title	Biobased biodegradable nets for horti- and agriculture
Theme	Circular
Implementing institute	Wageningen Food & Biobased Research
Project leader research (name + e-mail address)	Wouter Post (wouter1.post@wur.nl)
Coordinator (on behalf of private partners)	Hendriks graszoden (info@hendriks-graszoden.nl)
Project-website address	https://topsectoragrifood.nl/project/af-17010-bio-based-biodegradable-nets-for-horti-and-agriculture/ https://www.wur.nl/nl/Onderzoek-Resultaten/Onderzoeksprojecten-LNV/Expertisegebieden/kennisonline/Biobased-biodegradable-nets-for-horti-and-agriculture.htm
Start date	1 oktober 2018
Final date	30 september 2020

Approval by the coordinator of the consortium	
The annual report must be discussed with the coordinator of the consortium. The "TKI's" appreciate additional comments concerning the annual report.	
Assessment of the report by the coordinator on behalf of the consortium:	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Not approved
Additional comments concerning the annual report:	

Summary of the project	
Problem definition	<p>Agricultural and horticultural netting is widely used to improve crop quality, increase yield and reduce labour during harvesting. A major drawback of the plastic netting is their disposal: currently used non-biodegradable plastics, like (oxo-degradable) polyethylene and polypropylene, can accumulate in soil as visible and invisible plastic waste. Recycling of the plastic netting is labour intensive and difficult because nets are highly contaminated with soil and organic materials.</p> <p>The objective of this project is to develop bio-based, in soil biodegradable netting for the production of grass turf. The netting should be compatible with current production methods (product demands over the entire crop-growth until harvesting), and should biodegrade in soil.</p>
Project goals	<p>Bio-based and biodegradable nets are known and commercially available for food packaging. These commercially available nets do however not satisfy performance requirements in horti- and agriculture. The netting for grass turf requires better mechanical properties and a different biodegradation profile in soil. During turf growth (1.5-2 years) netting should retain its mechanical properties in soil. After harvesting and installation netting should degrade in soil. Opposite to triggered degradation the aim is to protect the netting against biodegradation for about 2 years and then allow the natural biodegradation process.</p>

	<p>In this project, the main bio-based, biodegradable plastic that will be used is PBS. PBS is considered the most suitable material with respect to processing, mechanical and end-of-life properties. PBS is commercially produced from biomass. The challenge is to meet the requirements during production of nets, the functional life of nets and the required behaviour during end of life.</p>
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Results	
Planned results 2019	<ul style="list-style-type: none"> • Finalizing the concept definition of the targeted application. • Development and characterization (both on thermal properties and mechanical integrity) of at least 10 new potential material compositions that aim for agricultural netting application. • Conducting a thorough biodegradation investigation on the developed compositions in both a simulated and application environment. • Conducting a 1st trial for net production at an industrial processing facility.
Achieved results 2019	<ul style="list-style-type: none"> • Concept definition finalized and approved by all partners. • More than 10 new materials have been developed and characterized on their feasibility to be used in netting applications. • Biodegradation trials with developed compounds are being conducted at lab scale and at the application environment of one of the consortium members. Results show that de biodegradation rate can be steered by material composition. • A successful 1st industrial production trial of netting was performed at a consortium member's facilities using the three materials with the highest application potential.
Planned results 2020	<ul style="list-style-type: none"> • A manuscript on the biodegradation results will be prepared and submitted to a scientific journal. • Finalization of the 3 biodegradation trials. • Characterization of the developed netting and a final industrial netting trial using one of the consortium members facilities. • Other options to publicly distribute project outcomes will be explored. • Finalization of project and reporting of project results

Deliverables/products in 2019 (provide the titles and /or a brief description of the products/deliverables or a link to a website.
<u>Scientific articles:</u> Manuscript in preparation
<u>External reports:</u> N.a.
<u>Articles in professional journals/magazines:</u> N.a. (options will be explored in 2020)
<u>(Poster) presentations at workshops, seminars, or symposia.</u> N.a. (options will be explored in 2020)
<u>TV/ radio / social media / newspaper:</u> N.a. (options will be explored in 2020)
<u>Remaining deliverables (techniques, devices, methods, etc.):</u> N.a.