

CZESTOCHOWA UNIVERSITY OF TECHNOLOGY



CZESTOCHOWA
UNIVERSITY
OF TECHNOLOGY



www.pcz.pl

Completely biodegradable bio-based derived plastic mulch foils with a functional inner layer

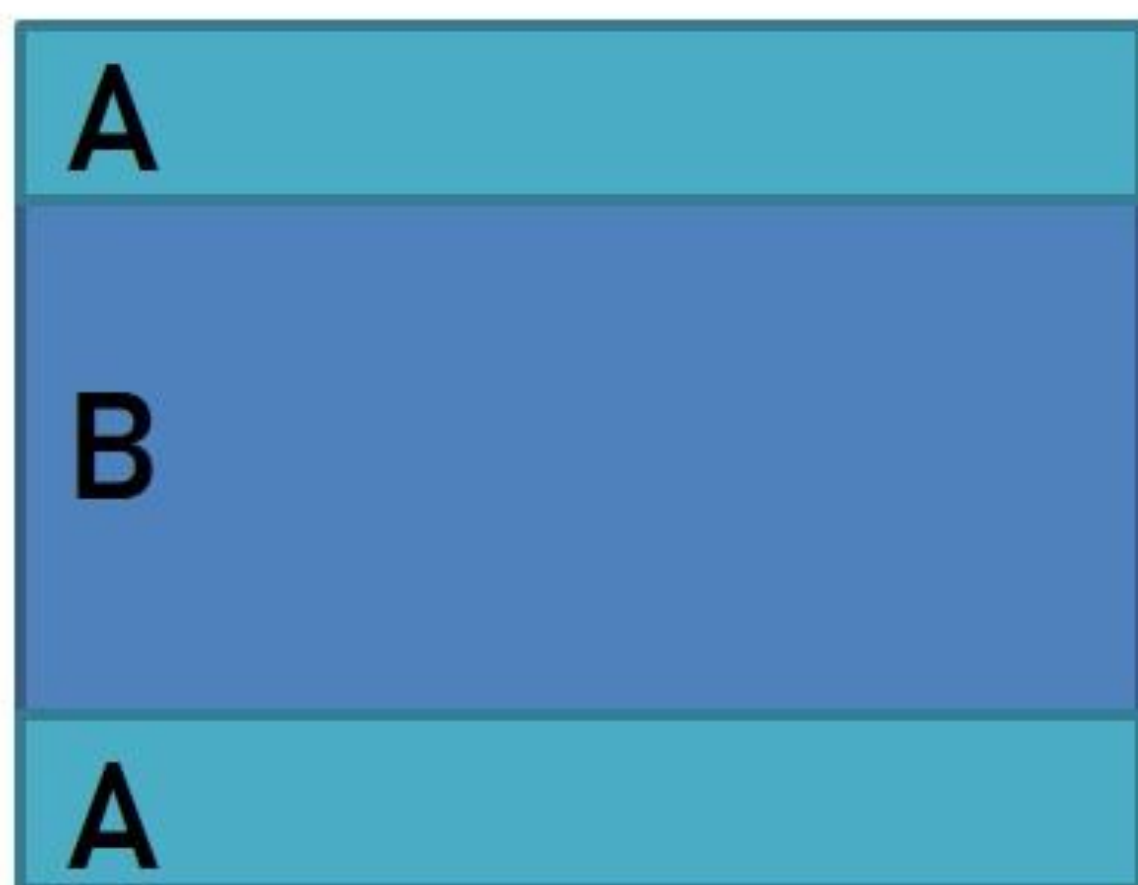
Authors:

Krystyna MALINSKA, Przemysław POSTAWA, Tomasz STACHOWIAK, Agnieszka PUDELKO, Danuta DROZDZ, Dorota NOWAK
CZESTOCHOWA UNIVERSITY of TECHNOLOGY

Faculty of Infrastructure and Environment, Faculty of Mechanical Engineering & Computer Science

ABSTRACT of INVENTION

The subject of the invention is an innovative structure of a biodegradable bio-based mulch foil used in conventional and organic agriculture for growing plants.. This is an alternative for conventional plastic mulches and is applied to suppress weeds, and thus reduce the use of pesticides. The presented invention aims at solving the problem with on-farm waste generated from the use of conventional non biodegradable foils. The most pressing issue with the use of thermoplastic polymers is associated with the elevated costs of recycling. The idea of the presented invention is to use the biodegradable mulch foil on the fields and after vegetation season let it decompose in soil or collect it and compost in on-site. This is possible due to the types and ratios of materials used for foil manufacturing and a unique structure of the foil itself. The foil consists of 3 layers with different functionalities. Outer layer demonstrates a sufficient mechanical resistance and longer degradation time and the inner layer is made with polymer with faster time of degradation. Additionally, the inner layer could be filled with different active substances and/or nutrients to facilitate soil properties and plant growth. All polymer materials, fillers and additives used for manufacturing the presented foils are bio-based and biodegradable.



Layer A (outer)
longer time of degradation

Layer B (inner)
functional layer
with faster degradation

Layer B (inner) is functional layer for transfer different substances during degradation proces from film to soil. It could be field of:

- bio fertilizer,
- fragrances (eg. eucalyptus, menthol),
- biochar from various sources,
- biobased fillers,
- wastes from plant production,
- filler modifying soil properties.



Defined problems:

- huge costs of recycling mulch foils in agriculture,
- problem of harvesting from fields of thermoplastic films,
- burning thermoplastic films in the fields.

What problem the invention solves:

- limiting the use of non-renewable resources,
- reduction of costs and field works related to foil disposal
- materials used as a filler in the inner functional layer could be safely mixed with soil after vegetation process,
- the invention could be used as a welded bags for dirty waste difficult for utilization.

Purpose and application areas:

- agriculture – biodegradable mulch films,
- biodegradable one use gloves,
- biodegradable animal extrement bags,

Acknowledgements for:

Wojciech Pawlikowski –

Marta i Mariusz Póttorak -



Contact person: Krystyna MALIŃSKA
Email: krystyna.malinska@pcz.pl



Poland, 42-201 Częstochowa,
ul. J. H. Dąbrowskiego 69
+48 34 361 25 80, +48 34 325 04 98
e-mail: rektor@pcz.pl

Technology Transfer Center
ul. JH. Dąbrowskiego 69, Office no.146
tel.: 343250 - 982
e-mail: ctt@pcz.pl

OTT
PCZ

