

THE NEW BIO-LACQUER PRODUCED IN ITALY RECYCLING THE WASTE OF TOMATO PROCESSING

The [BiocopacPlus project](#) of the Virginio Chiesa Farm (Italy) has developed a new bio-lacquer produced recycling tomato waste. Using renewable sources like industrial tomato processing by-products, this innovative technology offers an effective and environment-friendly alternative to the oil-based lacquers usually applied on the metal packaging surface to improve their corrosion resistance.



Cutin, an element contained in tomato peel is the substance used to produce the organic-based lacquer. Being a natural polyester-like polymer, Cutin is used as a basic bio-resin for the production of the lacquer.

The process of extracting the Cutin from discarded peels doesn't use solvents and it is based on simple and well-known technologies, with high performances and returns at relatively low costs. The waste remaining after Cutin extraction can still be used for the production of biogas, with better yields. The method can be applied independently of the geographical origin of the tomato and the type of tomato peels. The innovative process has been patented and it can be easily replicated in other contexts or countries, to produce a locally sourced bio-lacquer.



The first Pilot Plant for the Cutin extraction has been installed in October 2016, in the Virginio Chiesa Farm. The plant is already a prototype with a treatment capacity to extract the Cutin from 100 kg of peels per hour. The project is currently working to expand the production of the bio-lacquer at industrial scale.



The innovation is an example of circular economy in action in a territory. Based in Canneto sull'Oglio (Mantova Province), the Dalla Chiesa Farm has been operating since 1947, cultivating 180 hectares with cereals, maize and tomato. In addition, the Farm manages a biogas plant to produce energy, which is fed with tomato waste of the Farm and collected from the transformation industries of the area. The idea to produce the bio-lacquer came by observing that the tomato's peels were not properly processed in the digester due to their Cutin content. Working with the [Experimental Station for the Food Preserving Industry \(SSICA\)](#) and other specialized structures based in the area, the Farm has set up a Consortium to develop the process with the financial contribution of the Life + Programme of the European Union.



The project realized to design the new production process included different components: the design and scale-up a prototype Plant for the Cutin extraction process to obtain a substance with constant physical-chemical properties and suitable for the bio-resin formulation; the optimization of the



Plant in terms of resource efficiency and saving (water, energy, emissions) and economic sustainability by using automated and low maintenance technologies; the production of a bio-lacquer suitable for coating food-grade metal cans and to be applied on standard industrial lines; the production of new ecological cans, sustainable from their production to disposal; the analysis of economic potential of the exhausted skins (e.g. for bio-energy applications) and to assess environmental sustainability of the production process.

The positive results obtained and the technical characteristics of the process and product are described in the [Report published on the Biocopacplus website](#) and allow to adapt the application to other territories characterized by tomato production.

The process developed presents significant advantages for the protection of consumers' health. The safety of food packaging and its related materials is a very important issue for the entire agri-food supply chain. The use of a bio-lacquer replacing synthetic lacquers also reduces the risk of environmental pollution

At the same time the great advantage for tomato growers and processors is the economic value that this process adds to tomato waste and the reduction of costs for its elimination. The European countries generate more than 300,000 tons of solid tomato residues and Biocopac identifies a new possibility to exploit tomato wastes for higher-value and useful products, using non-conventional carbon sources to produce bio-lacquers rather than fossil sources. Furthermore, according to the project, tomato waste can be stored during the tomato harvest time, and then used throughout the year for Cutin gradual extraction, generating an advantage for the continuous exploitation of the processing Plant.

Stefano Chiesa won the [UNIDO 2017 International Award on Agribusiness](#) and the [2017 Oscar Green](#), organized by the Italian Coldiretti Association to reward innovative ideas in agriculture coming from young farmers start-ups.

The BiocopacPlus documentation has been disseminated in numerous publications and conferences receiving great interest both on the innovative production process and on the specific bio-lacquer product, taking into account their significant potential impact on health, territorial economy and environment.

To know more

[BiocopacPlus website](#)

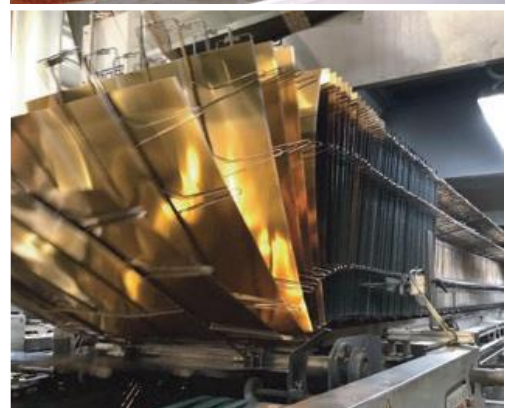
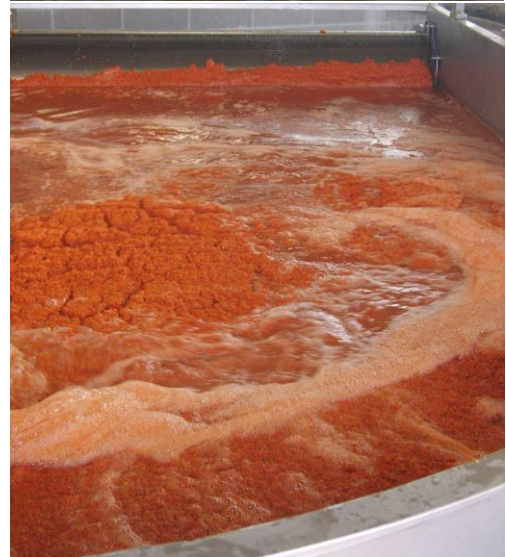
[Laymans Report](#)

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[Technical Report Life+](#)

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[Oscar Green in giovanimpresa.coldiretti.it](http://giovanimpresa.coldiretti.it)

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