



RE-DIRECT

Pro Natura in Belgium is developing new products and sustainable value chains

Besides composting, what else can you do with green waste? That is being investigated by the social enterprise Pro Natura, which employs people with difficulties to access the normal labour market. Pro Natura is specialized in the management of green spaces and is handling a very diverse mix of green waste every day. Pro Natura has even setup a special innovation department to develop new applications for this valuable green resource.

"We are investigating how we can separate fibres

and other components from our green waste," says Rein Dessers, Business Developer at Pro Natura. "It concerns grass and hedge clippings, or cuttings from invasive plants species such as the Japanese knotweed. The intention is to process those fibres into new materials with different applications."

Valorisation of green waste

Pro Natura tries to do a first valorisation directly after the harvest. They look at which machines they need, who can use the fibres and for which materials. They send samples of natural fibres from residual streams to companies that test them in their production process. Pro Natura especially wants others to do research with these fibres.

Other partners of Pro Natura such as IVM, an intermunicipal company from Meetjesland, are also requesting to valorise green waste. *“The municipalities and intermunicipal companies are currently paying 40 to 70 euros per ton for grass disposal. Supposed that certain streams can be converted into raw materials and value can be created, this can stimulate green management in a positive way. A good example of this is the fight against Japanese knotweed, an invasive species that grows because*



Picture of Japanese Knotweed it has no natural enemies here. It destroys streets, cycle paths and dikes. Municipalities are obliged to combat Japanese knotweed, but that combat is very labour-intensive and therefore expensive. If a usable fibre with good application from this invasive species could be extracted, the revenues from this application could compensate for the cost

for combatting this invasive plant.”

Product development

Within the RE-DIRECT project some of the harvested green cuttings, Japanese Knotweed, raspberry and roadside clippings, were tested to produce biochar and activated carbon. The first results look very promising.

Pro Natura is now working on partnerships to develop new products: they aim to use the biochar as a replacement for growing substrate in greenhouses or to clean rainwater from roads and parking lots. The activated carbon instead shall be used as a feed additive for animals in order to reduce the amount of greenhouse gases they produce and improve their resistance to sickness.

Besides these approaches Pro Natura is also developing other products from green waste: The prunings of raspberries are mixed with a special manipulated starch to produce a 100% biodegradable fruit basket.



Pictures of raspberry clippings (left) and roadside cuttings (right)

The fibres of Japanese knotweed were tested by *Timelab* to produce a new fibreboard called *Knotplex*. Other tests on Japanese knotweed and ivy were done by *Orineo*. Mixed with natural resins it can be used to produce innovative table tops and cast floor. With blends of green waste, differing in size and composition, Pro Natura is also doing tests with *testlab Glimps*, putting a fungi-green mix inside designed forms. The fungi will feed on the green waste and cover the form completely. After removing the cover and baking the fungi the design is finished and can last for years but is also biodegradable. Test are done with lamp shades and funerary urns.

The holistic approach

The innovation that Pro Natura imple-

ments stimulates the circular economy, but also creates jobs in the social economy. The pre-treatment of the waste will mainly be done mechanically, which will not result in so many jobs. But in logistics there are: the components that we extract from green waste, such as the fibres, must be packaged and sent. The production of bio-based end products, such as mycelium objects, fibre plates, biochar, moss mats, etc., also includes work for Pro Naturas target group.

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