Case Produsentpakkeriet

Improving the utilisation of co-streams in potato and vegetable processing

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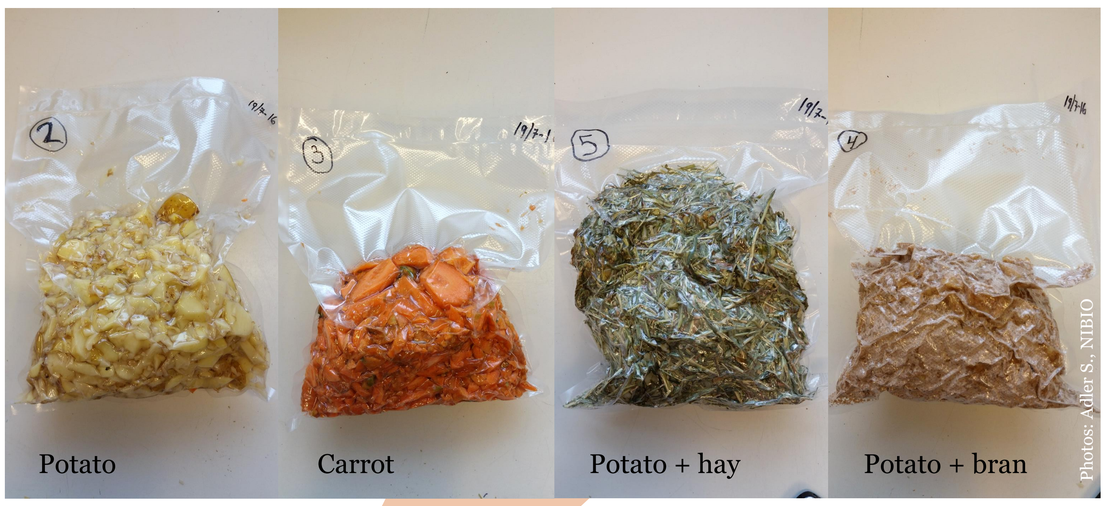
The research project **CYCLE** aims on achieving total utilisation of raw materials from fish, chicken and vegetables with cycle thinking and sustainable technological solutions for an efficient and profitable food industry. CYCLE-industry partner **Produsentpakkeriet** is a sorting and packing facility for vegetables and potatoes. The company wants to increase the economic return from co-streams and decrease the costs related to disposal of wastes. In CYCLE, options have been identified for upcycling poorly utilised **co-streams** such as discarded potatoes and residual soil.

Photo: Adler S., NIBIO

Potato roundbales

CYCLE industry partner Orkel ensiled a mix of discarded and chopped potatoes, grass silage and beet pulp in two roundbales using the Orkel Compactor.

- Run-off was observed from the bale with 24% dry matter, but not from the bale with 29%
- After 12 weeks both mixes were well preserved and starch content had decreased with about 10%
- The low elasticity of the material made it challenging yet manageable to wrap the bales in plastic



Photos: Adler S., NIBIO

Ensiling

In the CYCLE spin-off project SoCaPro (Regional Research Fund Mid-Norway) researchers are exploring options to ensile discarded potatoes and vegetables mixed with other ingredients and probiotic bacteria in vacuum bags.

- Ensiling may improve feed value and extend shelf life
- Probiotic bacteria can have beneficial effects on gut health in e.g. pigs and calves

Thor-Eirik Albrektsen, manager at Produsentpakkeriet, discusses resource utilisation with CYCLE researchers.
Photo: Adler S., NIBIO

Photos: Loes, A.-K., NORSØK

Potato residual soil

At Produsentpakkeriet, annually 800 tonnes of residual soil is disposed of as landfill for 30 years to avoid spreading of plant diseases. CYCLE proposed a project idea for alternative, but safe use of this resource.

- Heat released during composting (right photo) may be utilised for sanitising residual soil
- Sanitised soil may be returned to agriculture or processed further to garden soil

CYCLE

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www.cycleweb.no

CYCLE industry partner

Produsentpakkeriet

Produsentpakkeriet Trøndelag AS, established at Frosta in 2007, is a private limited company with about 140 shareholders, mainly potato and vegetable producers. Produsentpakkeriet receives 10,000 tonnes of potatoes and 1,500 tonnes of carrots every year, whereof 55% is sold fresh, 32% goes to food industry, 6% is sold as feed and 7% is deposited.

Upcycling

CYCLE has studied options for upcycling poorly utilised products and developed spin-off projects. Implementing the new knowledge has a potential to improve the utilisation of local resources, introduce new products with interesting properties and increase the economic return of potato and vegetable processing plants.

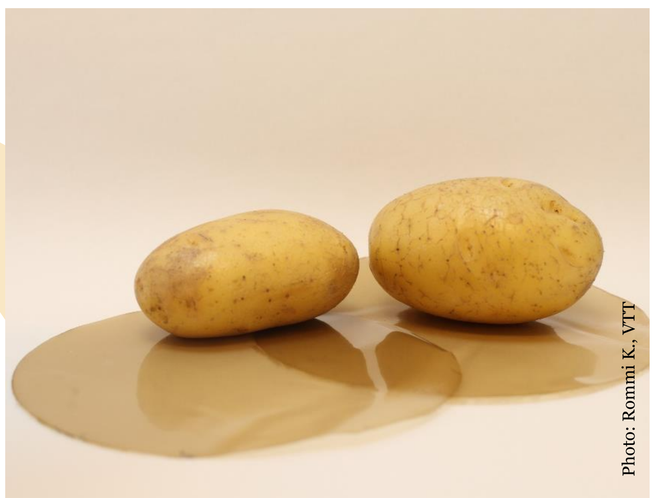

Photo: Rommi K., VTT

Biopolymer film

CYCLE investigated options to prepare biopolymer film from potato peel mass (Rommi et al. 2015)

- Film properties: Excellent grease barrier properties, highly resistant towards oxygen penetration in dry conditions, but low resistance towards water and water vapour
- Possible applications: Packaging of dry foods, potato film for mulching

References
Rommi, K., Rahikainen, J., Vartiainen, J., Holopainen, U., Lahtinen, P., Honkapää, K. and Lantto, R. 2015. Potato peeling costreams as raw materials for biopolymer film preparation. J. Appl. Polym. Sci., 133, 42862, doi: 10.1002/app.42862.

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