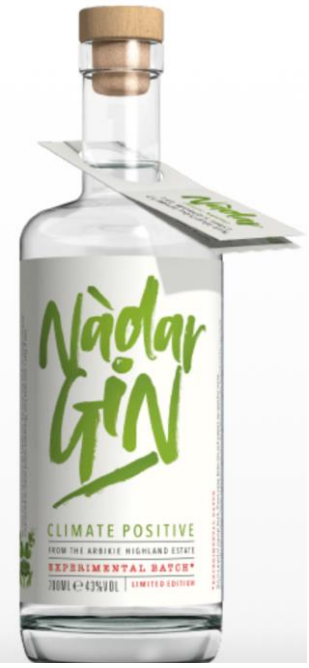
Practice Abstract #12

TRansition paths to sUstainable legume-based systems in Europe

Distilled spirit production can serve as a new legume market

Problem

Distilled spirits are typically produced from cereals such as barley, wheat, rye or corn due to their relative ease of processing, and their large starch nutrient stores which, once broken down by the processes known as 'milling' and 'mashing', can be fermented with yeast to produce high yields of ethanol. Critical to this conversion process is understanding the characteristics of the starch present and the conditions required to break it down into smaller, simple sugars suitable for yeast conversion.



In all cases the milled raw material must be heated, in the presence of water, to a material specific temperature. This allows the starch granules to become hydrated and ultimately, burst open exposing the starch and allowing it to be broken down in the presence of enzymes.

Research findings

Legumes are no different, and studies are being completed to determine the conditions required to convert their native starch into simple sugars. A cooking temperature of 80°C has been identified, which allows the hydration and disruption of most legume starch granules, although variations between legume species exist.

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Policy Makers | Inputs | Primary Production | Aggregation | Processing | Distribution | Retailers | Markets | Consumers

SUSTAINABLE DEVELOPMENT GOALS

Knowledge Exchange & Communication | WP2: Case Studies | WP3: Nutrition and Product Development | WP4: Markets and Consumer | WP5: Life Cycle Assessments and Environmental Assessments | WP6: Economic Assessments of Legume Production and Consumption | WP7: Policy and Regulations | WP8: Transition and Decision Support Tool

All Pratice Abstracts prepared by the TRUE Project in the EIP-Agri common format can be found here: https://ec.europa.eu/eip/agriculture/en/find-connect/projects/transition-paths-sustainable-legume-based-systems

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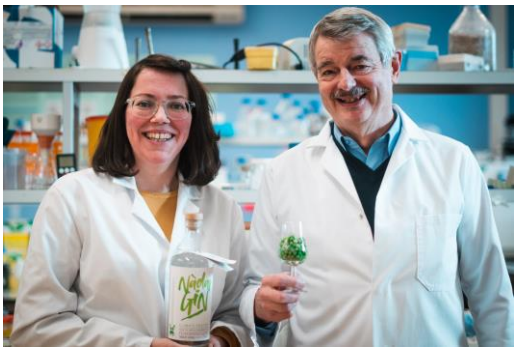
It has also been shown that, unlike some cereals, legumes do not have the natural and necessary enzymes, hence the need to add commercially available ones. A combination of high temperature tolerant alpha-amylase and glucoamylase has been shown to be effective in aiding this break down.

The successful conversion of legumes into distilled spirit, most likely to be a neutral base spirit for use in flavoured spirit production, for example gin, **opens up a new, premium, high value market for legumes.**



World's first climate positive gin made with peas. *Photo credits ©: Arbikie Highland Estate*

About TRUE

The EU funded project "TRansition paths to sUstainable legume based systems in Europe" (TRUE) is a balanced practice-research partnership of 24 institutions, which aims to identify the best routes, or "transition paths" to **increase sustainable legume cultivation and consumption across Europe** and includes the entire legume feed and food value chains.

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