



**MORE  
THROUGH  
MALT**

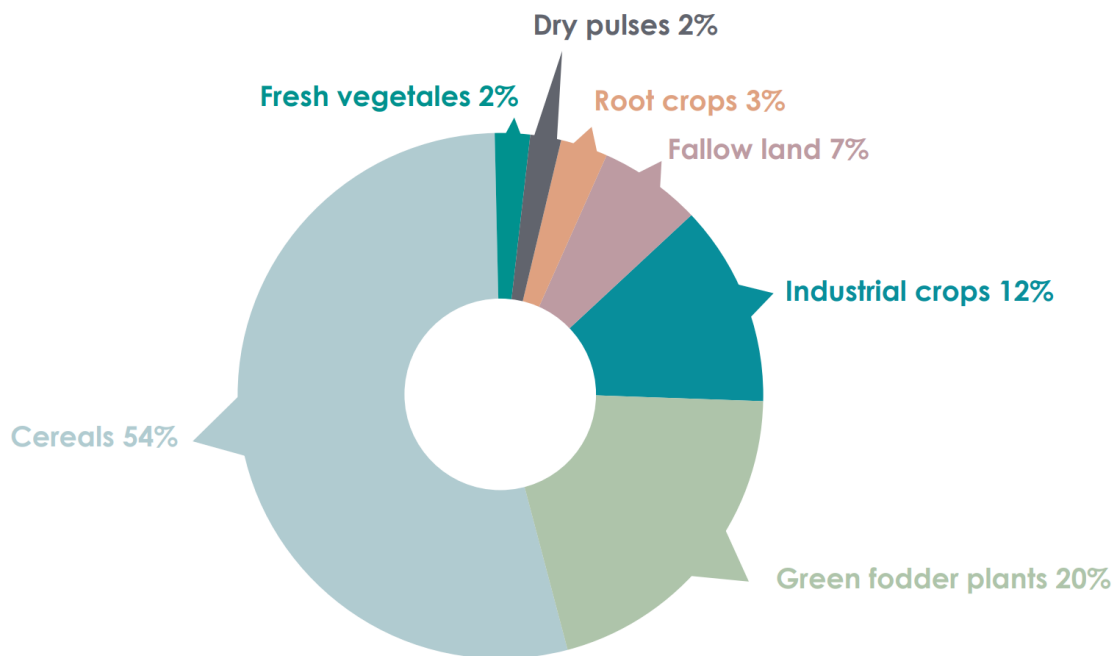
**Sprau®**  
malted faba (fava-, broad-, field-) bean  
**for brewing**

# Sprau® – malted faba bean for brewing

- Sprau® is germinated and malted faba bean
- Faba bean is a pulse that play a crucial role in sustainable farming by supporting crop rotation
- Sprau® delivers **benefits** for **brewing process** and **final product**:
  - Excellent source of nutrients for yeast, supporting **healthy fermentation** and yeast metabolism, resulting **in low levels of fermentation by-products**
  - **Enhances hop aromas** in beer, making it an excellent choice for hoppy beers such as Pale Ale and IPA
  - High protein content in Sprau® aids **foam formation**, providing a stable and attractive foam on the beer
  - Sprau® **adds body to the beer**, providing a richer and **fuller mouthfeel**.
  - Beer has **balanced flavor** profile and maintains **typical beer flavor**



# One of the key action points of EU Biodiversity Strategy 2030 is reversing the decline of genetic diversity



- The numbers are striking, there are **20 000 species** of edible plants worldwide, yet **fewer than 20 species provide for 90% of our food**
- **Pulses** (beans, peas) play an important role both in a healthy, plant-based diet and in sustainable agriculture
- Still nowadays cereal crops are dominating. In Europe, only 2% of arable land is used for cultivation of pulse

# We support biodiversity

by introducing regenerative agriculture and by diversifying our product portfolio

- A key element of **regenerative agriculture** is maintaining a **healthy crop rotation** that includes not only cereal grains but also pulses
- Crop rotation builds up soil fertility, supports soil microbial diversity and controls weeds, diseases and insects
- **Pulses** are particularly beneficial in a crop rotation as they bind atmospheric nitrogen, thereby reducing the need for fertilization



# Why faba bean?

- We re-discovered an ancient crop, **faba bean**, also called fava bean or broad beans, that has been present in Finland for long time: cultivation dates back to the 7th century.
- Faba bean is a legume plant which suits perfectly in crop rotation with cereals for a more **sustainable food production**. It has strong biological nitrogen fixation capability; it improves soil fertility, increases biodiversity; and hosts and feeds pollinating insects.
- **Germination**, or sprouting, is a natural process by only adding water and controlling temperature and moisture. Germinated faba bean is the first ingredient of new brand **Sprau®** launched by Viking Malt Oy.



# Why does the faba bean need to be malted?

- Malting the beans using Viking Malt's unique post-treatment (patent pending) improves the flavor profile significantly
- Germination of faba beans reduces astringency, bitterness, and overripe fruit flavor of the faba bean flour
- Our unique process reduces the beany taste and results in an ingredient with an overall mild flavor intensity, mild beany taste with cereal and roasted flavor (according to **VTT** study)



# Possibilities and advantages of Sprau®:

- **Enhances hop aromas:** Sprau® enhances hop aromas in beer, making it an excellent choice for hoppy beers such as Pale Ale and IPA.
- **Foam support:** Due to its naturally high protein content, Sprau® aids in foam formation, providing a stable and attractive foam on the beer.
- **Adds body to the beer:** Sprau® adds body to the beer, providing a richer and fuller mouthfeel.
- **Nutrient-rich wort:** Sprau® wort is an excellent source of nutrients for yeast, supporting healthy fermentation and yeast metabolism. This results in **low levels of fermentation by-products**, which is particularly beneficial for producing clean and crisp hoppy beers.



# Brewing with Sprau®

# How to use Sprau® in brewery?

- Sprau® brings **flavors** that are typically associated with **light-coloured malts**
- Due to its naturally **high protein content**, Sprau® supports foam formation and is an excellent choice when hazy beers are in target
- As Sprau® wort is **excellent nutrition for yeast**: it supports yeast metabolism, while fermentation by-products tends to be on the low side. This is very beneficial in the production of hoppy beers such as Pale Ales and Indian Pales Ales, where low fermentation by-product levels are desired.
- Sprau® **boosts bitterness intensity**
- In low-alcohol beers produced through membrane filtration, Sprau® improved the taste somewhat



# Options for successful mashing

Faba Bean has **higher gelatinization temperature** (GT) than barley, its GT is continuing even up to 80°C. As comparison barleys GT is 63-66°C.

Malting does not change GT so it will be also high with Sprau® and this fact should be noted when planning the process.

Sprau® can be processed in several ways:

- Gelatinize Sprau® before mashing using jet-cooker and mix gelatinized product with other raw material and water and continue with mashing
- Heat up to 80°C only part of mashing water and mix Sprau® in and let it gelatinize. Dose in rest of the mashing water to drop the temperature to a wanted level and dose in the rest of raw material and continue mashing according to plan.
- Use thermostable amylase enzyme product to help with late gelatinization
- Sprau for beer can be milled with typical brewery mills. Depending on a mill type some adjustment may be needed to fine tune the best milling results



**Beer with Sprau  
vs.  
100% pilsner malt beer**

# Pilot brews sensory evaluation



- The general quality of the fresh beers was judged “good”
- Sprau® beers were found very balanced in flavor
- **Hop character (aroma)** and **bitterness** were well pronounced in beers
- **No green** or **sulphury character was detected** (typically reported for foodstuffs made from pulses)
- In most cases “oxidation” scores were significantly different when comparing fresh/aged beers. This was expected, as forced ageing typically promotes “aged” beer flavors to be detected.
- All forced aged beers were judged being acceptable. This is a satisfactory result when considering the forced ageing regime, 14 days, 37°C.



# 4 trial beers produced at Copenhagen University

Reference beer		Sprau beer	Sprau protein beer	Sprau starch beer
Viking Pilsner Malt 100%		Viking Pilsner Malt 85%	Viking Pilsner Malt 85%	Viking Pilsner Malt 85%
Sprau 0%		Sprau (with husk) 15%	Sprau (protein fraction) 15%	Sprau (starch fraction) 15%

# Brewing scheme in Sprau beers - University of Copenhagen.

Mashing (55°C), 55°C (20 min), 66°C (45 min), 73°C (45 min), 80°C (20 min)

Novozymes ceremix flex enzyme was used in all brews

Rice hulls, was used in all brews

Wort separation by lauter tun

Worts of the same density before boiling

Hopping regime: Cascade boiled for 60 min and Citra boiled for 5min. Target was to reach 50% from BU's from both hops. Target BU in ready beer 22-23

Protafloc was dosed in during last 15 minutes boiling in all brews

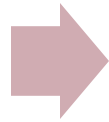
Fermentation with US-05 ale yeast; 7 days 19°C + 4 days 22°C + 7 days 0°C



# Results

	Reference beer (100% pilsner)	Sprau	Sprau protein	Sprau starch
alcohol by vol [VV%]	5,6 (destillate) / 5,8 (HPLC)	5,3 (destillate) / 5,3 (HPLC)	4,9 (destillate) / 5,0 (HPLC)	5,6 (destillate) / 5,8 (HPLC)
pH	4,10	4,21	4,33	4,26
Colour [EBC]	10,0	9,2	29,0	17,0
Bitter Units [IBU], Analytica-EBC Method 9.8	24	27	23	25
FOAM foam steinfurth [SKZ]	97	92	112	107
Hop intensity by VLB	4,8	6,3	5,8	5,5

The reference beer and the Sprau Starch beer ended up in the same alcohol content. Sprau seems to give higher pH values for wort



Sprau reference and Sprau husk beer are close in color, values are as expected. Haziness of Sprau protein and Sprau Starch beers most likely affected the analysis results, giving higher numbers



Sprau protein and Sprau starch fractions seem to support foam formation.



Slight variation in BU units but according to VLB's intensity results it seems that Spau is affecting the sensation of bitterness.

# Fermentation by-products

In these trials:

- Sprau starch and reference beer are close to the same level in the fermentation products
- Sprau and protein fraction Sprau – by-products of fermentation are lower compared to the reference beer.

Result	Reference (100% pilsner)	Sprau	Sprau starch	Sprau protein
Ethyl butyrate	147.7	101.3	153.2	96.1
Ethyl hexanoate	112.4	81.5	95.8	78.8
Ethyl octanoate	386.7	301.2	398.1	335.6
Ethyl decanoate	35.4	43.3	68.7	63.2
Ethyl dodecanoate	<5.0	<5.0	6.3	5.1
Acetaldehyde	9.3	2.8	8.2	6.8
Ethyl acetate	12.2	28.4	15.5	10.2
1-propanol	30.6	36.2	29.3	24.2
Isobutanol	38.1	0.28	37.7	30.5
Isoamyl acetate	0.41	11.6	0.78	0.35
2-methyl-1-butanol	14.3	24.8	14.3	9.4
3-methyl-1-butanol	52.5		54.5	53.4
2-phenylethyl acetate	<0.1		<0.1	<0.1
2-phenyl ethanol	32.9		14.4	16.6

# Two ways to handle Sprau in mashing beer

## Mashing program with thermostable enzyme

- Use Sprau during a standard mashing program with the addition of thermostable enzymes such as Ceremix.
- 66°C - 45 min
- raise the temp. to 80°C (1 st/min)
- 80°C - 30 min
  
- Enzym - Ceremix flex max recommended (5kg/tn)

**IMPORTANT!**  
The gelatinization temperature of Sprau is about 80 degrees C.

## Enzyme-free program

- Gelatinize Sprau in water at 80 degrees C for 20 minutes
- Then reduce the temperature to 63 degrees C by adding more water
- Add the malts and raise the temp. Up to 66 degrees C
- Mash as standard as in any beer

# The Rotator Blend is a customized mixture of malted cereal grains and malted faba bean Sprau®

- Barley Malt, Wheat Malt, Rye Malt, Oat Malt, and the malted faba bean Sprau®
- The Rotator Blend drives the shift towards a more sustainable beverage production by supporting biodiversity
- With Viking Malt's Rotator Blend, we diversify our own product portfolio and offer our customers in brewing and distilling the same opportunity



# Sprau<sup>®</sup> key functionalities and opportunities for beer

- Carries and intensifies **hop flavor**
- Supports **foam** formation
- Adds **mouthfeel**
- **Stable haze** in unfiltered beer, even with small dosages
- Does not endanger a **typical beer flavor**
- **Packaging** 25 kg bags



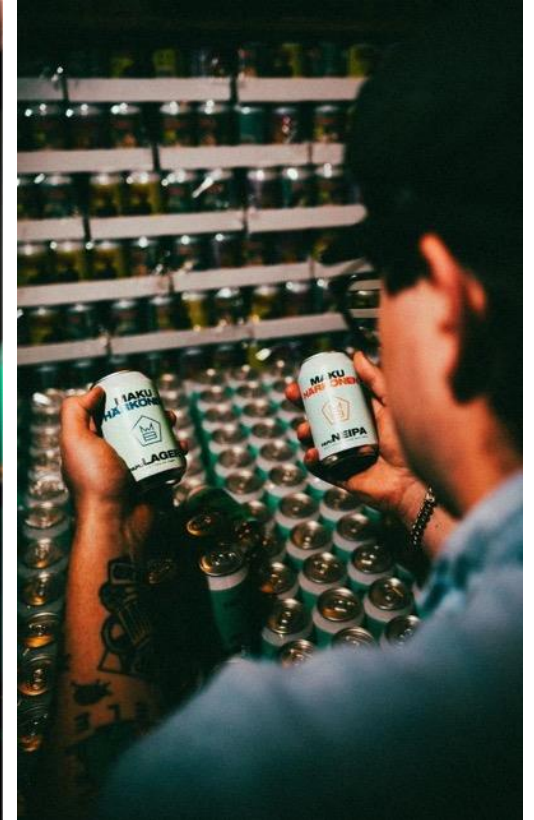
# Examples of use

# Finland – Maku Brewing

Härkönen Papu Ale NEIPA, Härkönen Bean NEIPA, Härkönen Bean Lager

## Press releases

- [Finnish brewery breaks out broad bean beer \(goodnewsfinland.com\)](https://goodnewsfinland.com)
- [Maku Brewing teki ilmastoystävällisestä härkäpavusta olutta - Juomaposti](#)
- [Brewery in Tuusula creates Finland's first beer made from broad beans | HS.fi](#)
- [Maku Brewing announcement \(LinkedIn\)](#)



# Sweden – Poppels Bryggeri

## Bean Me Up NEIPA

### Press releases

- [Sveriges första öl bryggd på bönor \(www.livetsgoda.se\)](http://www.livetsgoda.se)
- [Här är första ölet som bryggs på åkerböna \(www.livsmedelifokus.se\)](http://www.livsmedelifokus.se)
- [Premiär för öl på åkerböna \(www.ja.se\)](http://www.ja.se)
- [Poppels lanserar väldigt göteborgskt öl bryggt på bönor \(www.cafe.se\)](http://www.cafe.se)
- [Poppels Bryggeri announcement](#)



# Poland – ReCraft

## Nelson Session Sprau NE IPA, Superdelic Session Sprau NE IPA Press releases

- [After Scandinavia, it's time for Poland. Hot new product on the beer market \(portalspozywczy.pl\)](#)
- [Beer made from malted faba bean? Yes. \(Pivny marketing Facebook\)](#)
- [Finnish beer industry giant Viking Malt introduces innovation \(Chmielologia Facebook\)](#)
- [ReCraft Brewery announcement \(Facebook\)](#)



**1/2 LITRA PIWA  
ZAWIERA 25 GRAMÓW CZYSTEGO  
ALKOHOLU ETYLOWEGO**

**SPRZEDAŻ ALKOHOLU  
OSOBOM DO LAT 18  
JEST PRZESTĘPSTWEM**

**KRAFTY** **OD WTORKU,  
7.01**

<p><b>SUPERCENA</b> <b>8,99</b></p> <p>BROWAR TRZECH KUMPLI <b>Pils lub Wheeler</b> 500 ml/1 puszc. (17,98 zł/1 L)</p>	<p><b>SUPERCENA</b> <b>9,99</b></p> <p>BROWAR ARTEZAN <b>Take It Off lub Pure Noise</b> 500 ml/1 puszc. (19,98 zł/1 L)</p>
<p><b>SUPERCENA</b> <b>10,99</b></p> <p>BROWAR GWAREK <b>Belgian DIPA lub Double Hazy IPA</b> 500 ml/1 puszc. (21,98 zł/1 L)</p>	<p><b>SUPERCENA</b> <b>11,99</b></p> <p>BROWAR FUNKY FLUID <b>Funky Fluid</b> 500 ml/1 puszc. (16,98 zł/1 L)</p>
<p><b>SUPERCENA</b> <b>9,99</b></p> <p>BROWAR MOON LARK <b>Mindset lub Lovely</b> 500 ml/1 puszc. (19,98 zł/1 L)</p>	<p><b>SUPERCENA</b> <b>9,99</b></p> <p>BROWAR RECRRAFT <b>Styrian Dragon Sprau AIPA lub Styrian Fox Sprau AIPA</b> 500 ml/1 puszc. (19,98 zł/1 L)</p>

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# MORE POSSIBILITIES THROUGH MALT

