

Tritordeum

General Dossier

tritordeum

VIVAGRAN



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Tritordeum

the golden cereal

In 2014, Spanish researchers introduced a new cereal crop to the Spanish market after 40 years of plant breeding efforts, opting to retain its scientific name, **Tritordeum** (*Triticum* x *Hordeum*).

Today, **Vivagran** is carrying forward the legacy left by those pioneers.

In 2024, we celebrate the 10th anniversary of Tritordeum in the market.



About

Tritordeum is a **novel natural cereal crop**, resulting from a cross between durum wheat (*Triticum durum*) and wild barley (*Hordeum chilense*). It distinguishes itself through its **nutritional, agronomic, and sensory qualities**.

This new Spanish crop has been developed using traditional breeding techniques; it is not a genetically modified organism (GMO). It marks the first instance of a newly created cereal suitable for human consumption. As a natural crop species, it is registered with the Community Plant Variety Office (CPVO) of the European Union.

From an agronomic perspective, **Tritordeum is a resilient crop**, with yields comparable to wheat and displaying strong resistance to pathogens. Its minimal water and fertilizer requirements contribute to its reputation as a more **sustainable cereal**. Currently, it is cultivated in the Mediterranean region and Australia in both conventional and organic farming methods.

From a nutritional standpoint, Tritordeum excels due to its **lower content of indigestible gluten proteins** compared to wheat, rendering it a more easily digestible cereal. Additionally, Tritordeum is notable for its **high content of protein, dietary fiber** - arabinoxylans and fructans, active prebiotic carbohydrates that support the maintenance of intestinal bacterial flora, **lutein** - an antioxidant associated with eye health.

Tritordeum possesses **unique qualities and functionalities**, making it highly suitable for producing a diverse array of innovative functional products (i.e. baking, malting,...). This capability aligns with current consumer demands and emerging market trends.

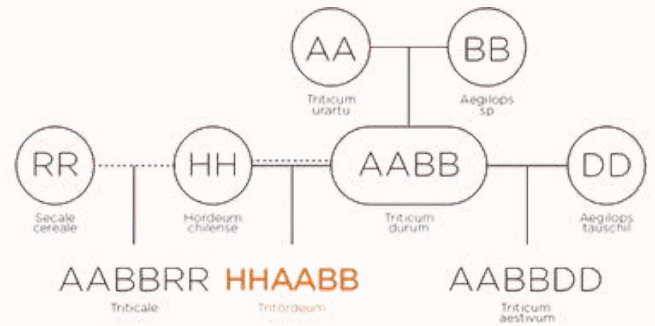


Story

40 years of development

Tritordeum was developed by a team of Spanish researchers who, inspired by Mother Nature, created a novel natural cereal.

Tritordeum originated in 1977 as a triumphant outcome of collaborative efforts by researchers at the Instituto de Agricultura Sostenible (IAS) of the Consejo Superior de Investigaciones Científicas (CSIC) in Córdoba. Utilizing classical breeding techniques, they crafted a novel cereal crop with both health benefits and minimal environmental impact. From its creation, researchers observed compelling traits in the new species, including large ears, elongated well-filled seeds, and elevated protein content.



The process involved in creating Tritordeum is inter-specific hybridization. In contrast, while bread wheat arose approximately 10,000 years ago through natural hybridization among three distinct species, Triticale and Tritordeum are two instances of hybridization engineered by humans.



Sustainability

A climate-change resilient crop

Tritordeum has inherited characteristics from its parent species, Durum wheat and Barley.

The Durum wheat accessions utilized to create the primary lines of Tritordeum originated from North Africa and Spain, exhibiting notable heat/drought and diseases tolerance. The Hordeum chilense lines, collected across diverse ecosystems ranging from low to high altitudes and varying proximity to shores or mountainous regions, displayed remarkable salinity and cold resistance.

The resulting progenies combine these diverse traits into one novel cereal crop.

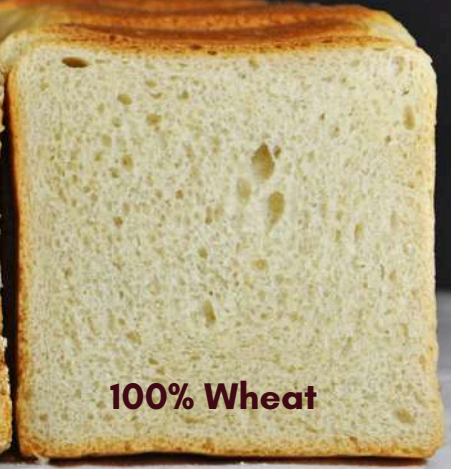
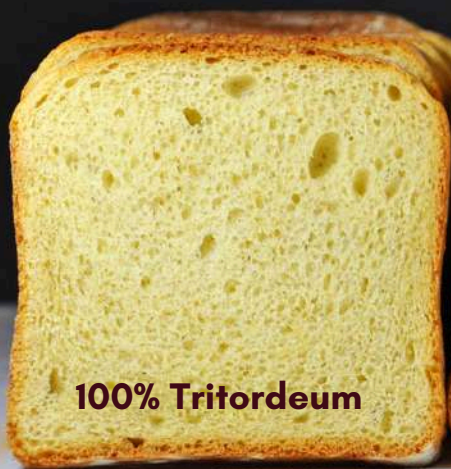
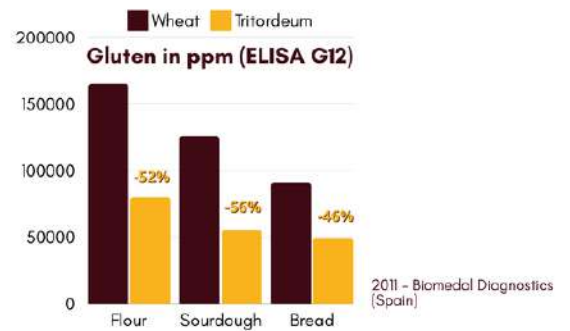
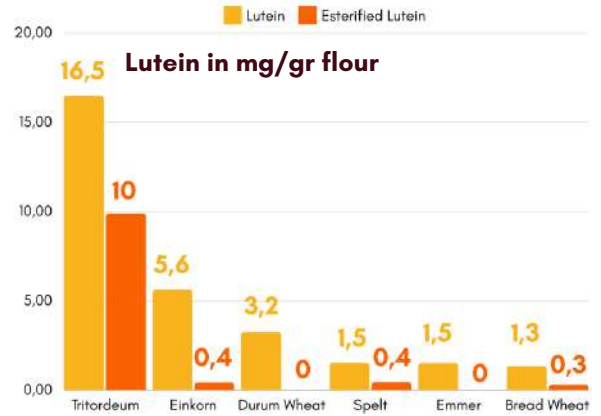


Nutrition

A nutrient-rich cereal crop

Tritordeum presents itself as a nutritious substitute for traditional wheat in our diets. Its adaptability across various applications enables its incorporation into a wide array of finished products, spanning from baked goods to beverages.

Compared to conventional wheat, Tritordeum present higher levels of protein, dietary fiber, antioxidants (**lutein**), and minerals. Additionally, it contains lower amounts of **immunogenic gluten proteins** (alpha and omega gliadins), making it an appealing choice for consumers seeking to reduce gluten intake or managing conditions like Irritable Bowel Syndrome (IBS) or Non-Celiac Gluten Sensitivity (NCGS).



Switch your product from Nutriscore B to A

Audience

catering to numerous target consumers

Tritordeum-based foods are catering to numerous consumers. Its high content of protein and digestible features make it a good option for consumers with gluten sensitivities (but not for celiacs).

In the Netherlands, Tritordeum is gaining popularity among the cycling community through a collaboration with GrainLabs, a company specialized in developing nutrition for Athletes.

Tritordeum's characteristics (golden color, easy-to-eat texture, and sweet taste) is appealing to young infants, and also is a good option to introduce gluten in their diet

Elders find this new cereal also attractive for its digestibility, soft bite and nutrient-rich composition..



Baking

The golden cereal

Tritordeum flour can be used as a partial or total substitute to wheat in a variety of baked goods, including bread, cakes, cookies, and pastries.

Compared to conventional wheat, Tritordeum present a natural golden yellow color - due to the presence of lutein, an excellent workability in multiple processes (craft and industrial), and stands out for its soft and short-bite crumb structure, contrasting with its caramelized and crispy crust.

The range of available flours and ingredients allows to develop products based on 100% Tritordeum.



Brewing

The best of wheat and barley

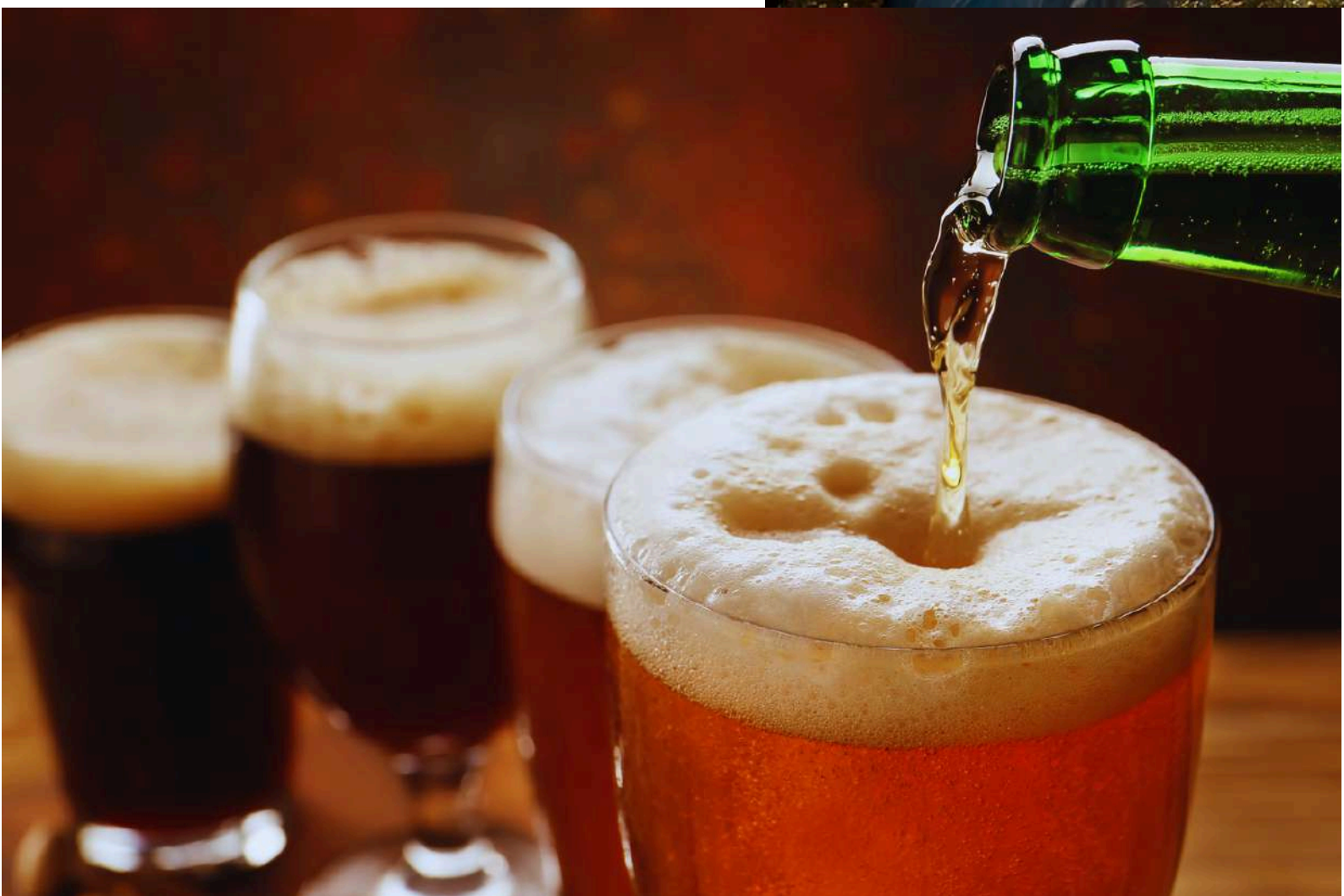
Tritordeum malt can be used as a partial or total substitute to barley and wheat malts in a variety of beer styles.

Compared to conventional barley malt, Tritordeum malt present a pronounced sweet taste, an excellent enzymatic activity support the conversion of complex starches into sugars, and a natural amber color.

The range of available malts available allows to develop a wide range of beer styles.

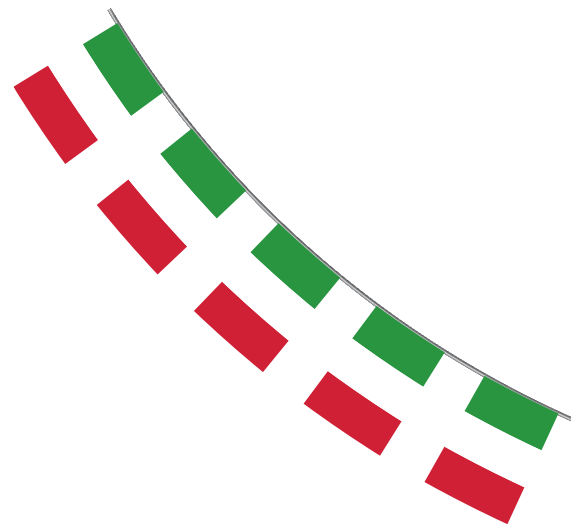


In 2024, Boortmalt launched a range of Tritordeum malts under the brand name:



Pasta & Pizza

two Italian classics re-invented



Tritordeum can be processed into flour or semola for pasta production. Its consistency and golden color make it especially suitable for the production of fresh and dry pasta.

Tritordeum pasta has a very good cooking stability (no starch release), a firm short-bite texture, no stickiness once out of the water, and the sauces stick well to its surface.

For its higher protein and fiber contents, it is an opportunity to develop products with better nutri-scores.

Tritordeum flour has a very good extensibility ideal for pizza making.

Its better digestibility due to lower immunogenic gliadins from gluten, make it a suitable cereal for those consumers that wish to reduce their gluten intake without giving up on their favorite foods.



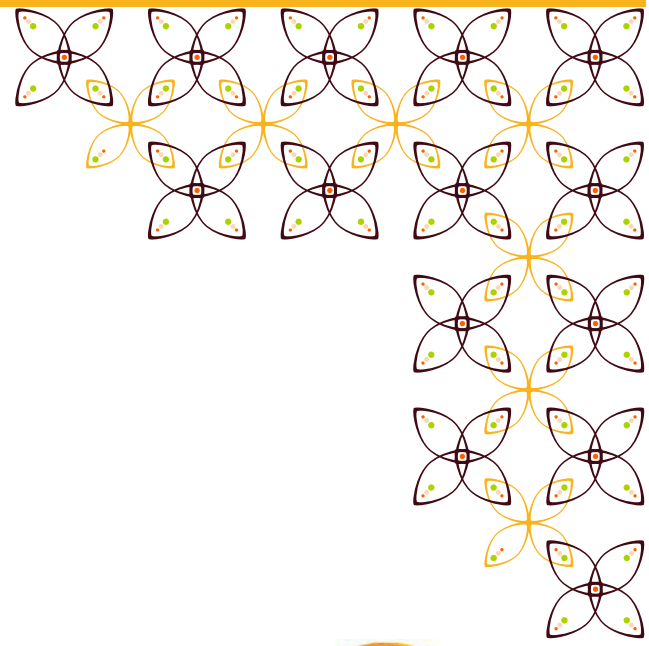
Brand

Mediterranean by essence

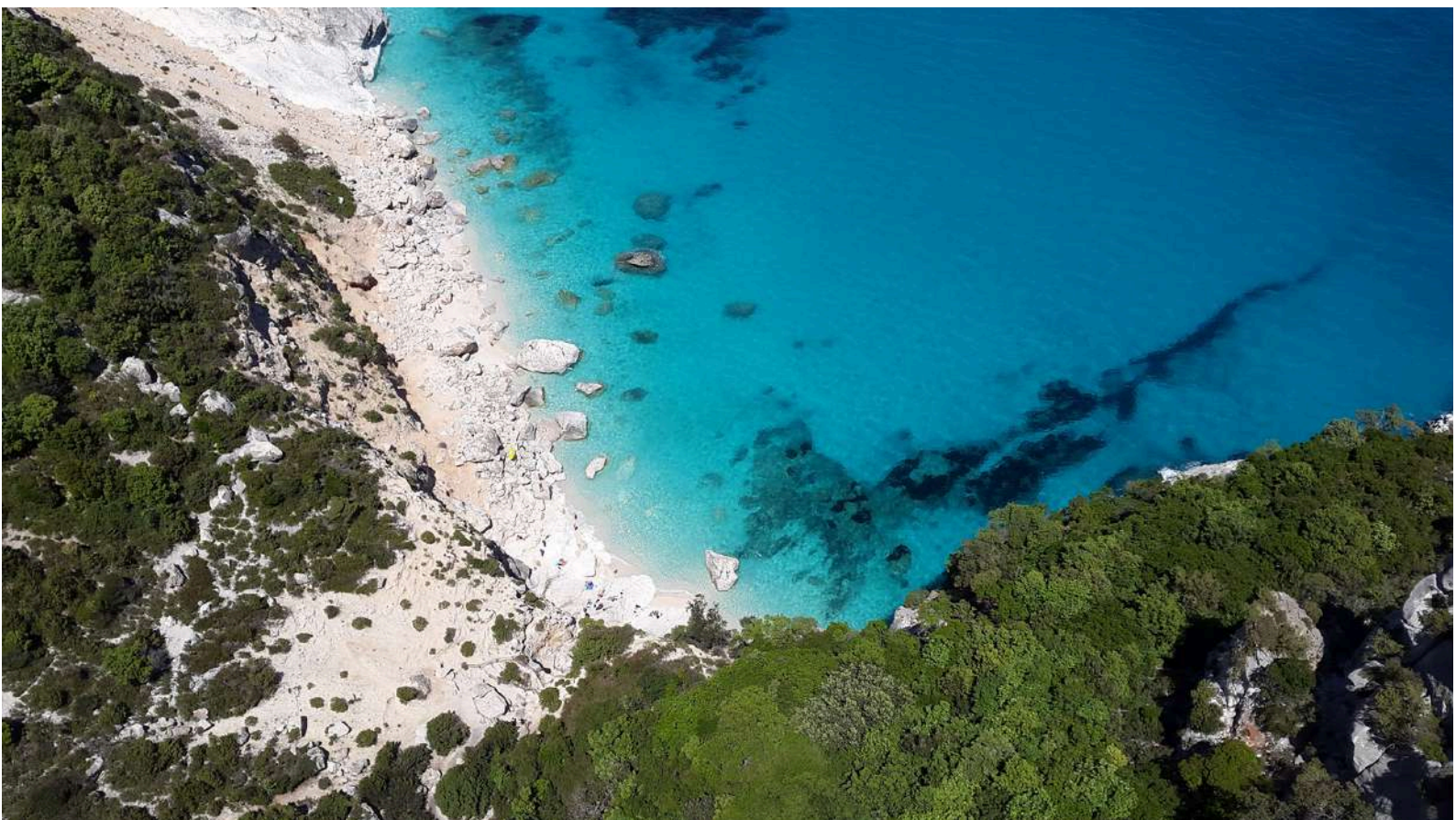
Tritordeum is more than a cereal; it's a journey rooted in innovation and sustainability. Born from the natural cross between ancient grains – durum wheat and wild barley – Tritordeum represents a harmonious blend of tradition and modernity.

Our commitment to preserving the environment while enhancing nutrition drives every step of our journey.

Food is for us, as Mediterranean people, a subject that matters. For us, it is a pillar of our life-style that is basic for our health, but also for our moments of indulgence and sharing with our loved ones.



We aspire for everyone to enjoy the Mediterranean approach to food in a relaxed, healthy, and indulgent manner, while also prioritizing environmental stewardship and the well-being of all involved in our value chain.



Ambassadors

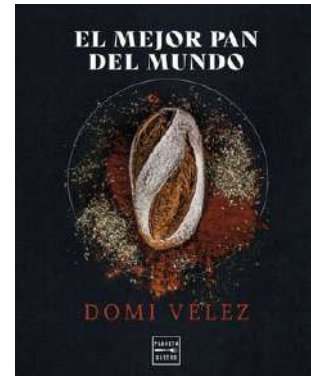
leading innovation in baking and brewing

Since its market launch in 2014, Tritordeum flour has conquered the heart of multiple bakers and professionals.

In Spain, Domi Velez is one of them, an impassioned craft baker in Andalusia, that developed a wide range of specialty breads based on Tritordeum flours and other ingredients.

In the Netherlands, Frank Van Eerd was the first baker to introduce the cereal among the Athlete community in multiple product development such as bars, cakes, biscuits and breads

More recently, Tritordeum made its entrance in the malting sector thanks to Boortmalt.



Domi Velez's first baking manuscript with over 20 recipes of Tritordeum-based breads



Masterbrewer Cristal Peck
Product Innovation Manager, Boortmalt
Antwerp, Belgium



Masterbaker Domi Velez
from Horno de Velez, Lébrija, Spain

World Baker 2021



Masterbaker Frank Van Eerd
from DeBisschopsmolen, Maastricht
The Netherlands

Owner GrainLabs

Value-Chain

exclusive from seed to food

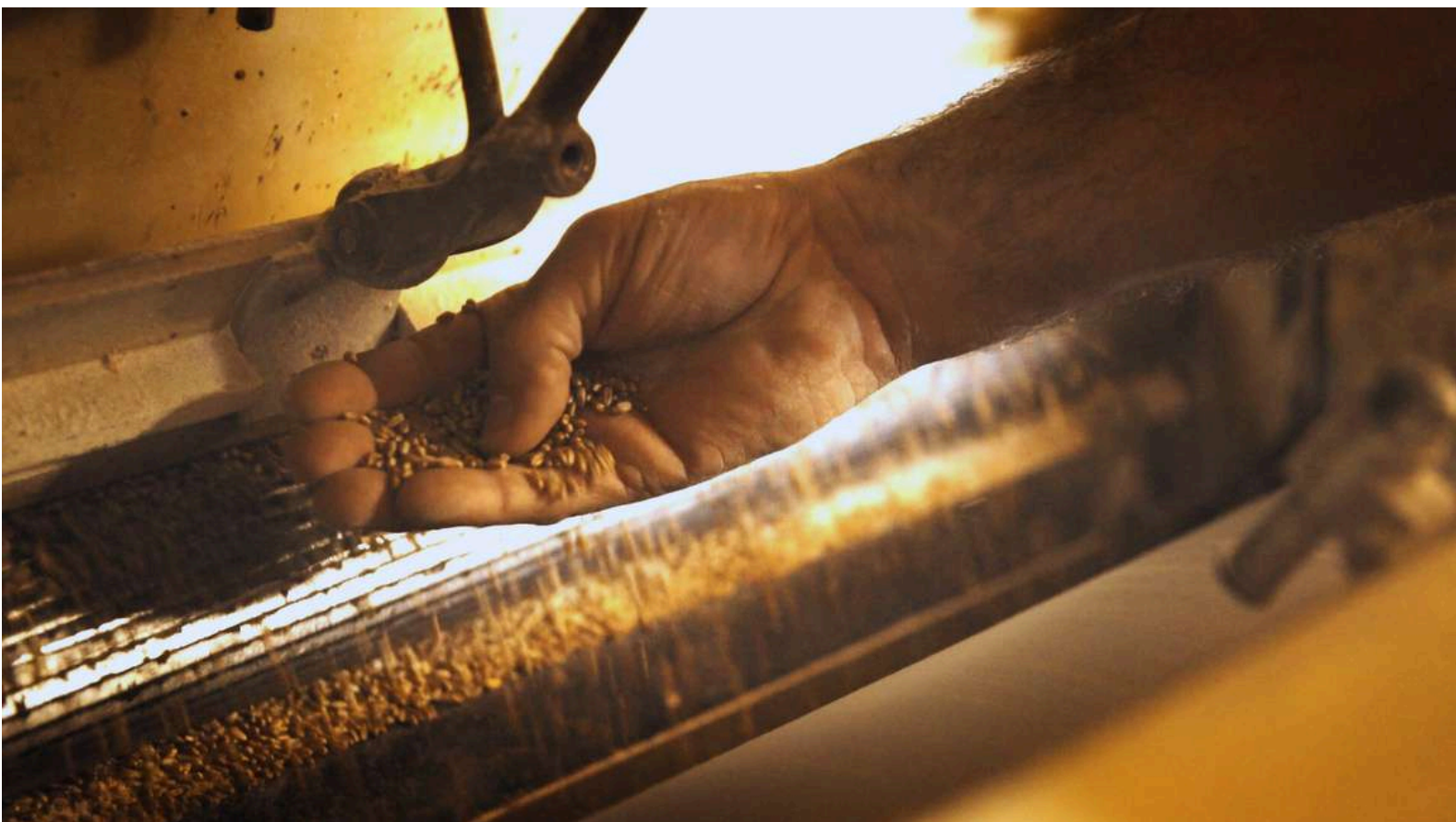


Tritordeum is a cereal crop produced under a close-loop value-chain model. Vivagran is the company establishing local value-chains partnering with local actors ranging from seed producers, farmers, millers, maltsters and other grain processors.

All partners are licensees of Vivagran and operate within their field to ensure the supply of material at a pre-established indicative price, ensuring stability in the market price positioning.

Tritordeum is produced under conventional and organic certified farming. Vivagran is currently setting up a production model based on regenerative farming.

The cereal crop is currently produced in Europe (Spain, Italy, Greece, France, Benelux and UK) and Australia.



Research

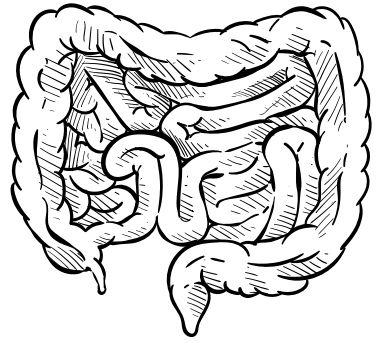
a widely studied cereal crop

Since the first cross between wheat and barley in 1977, Tritordeum has been widely studied by academic partners, private research centers, value-chain partners and Vivagran team.

Today, more than 150 scientific publications are available, making it one of the most studied minor crops in the World.

The 4 main areas of focus are:

1. **Plant Breeding**
2. **Sustainability**
3. **Nutrition**
4. **Applications**



Recent research conducted showed that Tritordeum-based foods may be a valid alternative, especially for patients with IBS or non-celiac gluten sensitivity.

Tritordeum bread can reduce immunogenic gluten intake without altering the gut microbiota in healthy individuals.

*All scientific publications are classified and available on the Tritordeum website under **R&D section***



Marketing

communication concept opportunities



Pan Payés de
Main concepts: n 50%
Nature

- 1. ORIGIN**
- 2. SUSTAINABILITY**
- 3. NUTRITION**
- 4. TASTE**

Pan Payés de Tritordeum 50%

100% Harina de Tritordeum

¿Qué es el cereal Tritordeum?

1. Se digiere mejor.
 2. Contiene fibra y aporta más salud.
 3. El cereal Tritordeum contiene vitaminas, minerales y fibra.

PAN DE TRITORDEUM
Más digestible
Más fibra

Recommended ingredient list declaration:
 Tritordeum (WHEAT, BARLEY). Tritordeum is a cereal crossing wheat and barley.

Vivagran

the company behind Tritordeum



Vivagran is a consumer-driven cereal-based biotechnology company focused on developing and commercializing high-value branded cereals.

We do breeding, produce seed/grains and grant licenses for the commercial exploitation of our proprietary crops.

Vivagran manages seed and grain production through collaborations with local cooperatives and independent farmers. We buy back the entire harvest and distribute it to licensed millers/maltsters.

We license our crops to third parties, granting them production and/or distribution rights in designated regions, whether with or without exclusive operating rights.

Our Team and Advisors

Etienne Vassiliadis

CEO & co-founder
Food scientist, 15+ years experience in Agro-Food Industry and specifically in R&D and Business Development, trained baker

Wiro Nillesen

CFO & co-founder
Entrepreneur, 15+ years experience in grain value-chain (spelt, Tritordeum)

Alba Martinez

Senior Plant Breeder
Involved in the Tritordeum project since the early start of the breeding program in IAS-CSIC.

Dr. Francisco Barro

Biologist. PhD in plant physiology
Research Professor at CSIC.

Dr. Paul Lazzeri

Botanist. PhD in Biotechnology.
Ex Max-Planck, DuPont Cereal Biotech leader.

Dr. Pilar Barcelo

Geneticist. PhD in Biotechnology.
Ex Max-Planck, DuPont Cereal Biotech leader.

Cristobal Martinez

Farming advisor.



vivagran

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