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MEDITERRANEAN



PULSE

From resilient crops to healthier diets shaping mediterranean food systems

CIHEAM BARI

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WADJET
A STORYTELLING COMPANY

Fueling the Mediterranean Future

Biagio Di Terlizzi

> **The next harvest is about food, farmers and resilience.**

The Mediterranean is under growing pressure. Water is becoming scarcer, soils are under stress, food prices are rising, and diets are drifting away from the balance that once defined the Mediterranean model. In this context, legumes are not a nostalgic return to the past. They are a practical, affordable and still underused part of the solution.

Beans, faba beans, lentils and chickpeas provide valuable sources of protein while remaining deeply rooted in culinary traditions that connect communities and generations. Yet their potential is still far from fully realised. Farmers often face fragmented value chains, limited processing capacity and weak market opportunities, while consumers may still see pulses as inconvenient, old-fashioned or poorly suited to modern lifestyles. For smallholder farmers in particular, cultivation will only become attractive if it generates reliable income and better prospects for their families.

The challenge, then, is no longer to prove that legumes are healthy and good for the environment. The evidence is already strong. What is needed now is to make them visible, viable and desirable again: foods that can appeal to younger generations, urban consumers and businesses, while supporting farmers, resilient agriculture and more sustainable food systems.

This issue of CIHEAM Files explores that challenge from different angles. Through stories, interviews, infographics, recipes and farmers' testimonies, it brings together science, culture, economics and policy. It also looks at initiatives already working to reconnect production, markets and consumption.
Among them is the BEANS Community, initiated by CIHEAM Bari to bring farmers, researchers, companies, civil society organizations and policymakers around the same table. Its premise is simple: legumes will only fulfil their potential if the actors shaping the food system share knowledge, build stronger value chains and work towards a common vision. That also means designing agricultural and post-harvest practices that add value locally, improve returns for producers and make legume cultivation economically worthwhile.

The opportunity is considerable. Legumes can help strengthen food and nutrition security, reduce pressure on natural resources, support local economies and reconnect Mediterranean diets with their own heritage. But their return will depend on whether farmers themselves see a future in growing them. The question is no longer whether legumes matter, but whether the region can create the economic, social and market conditions needed to place them back at the centre of its food future. Legumes are not a relic of the past but an investment in resilience: this is the Mediterranean's next harvest.

HUMMUS

LEXICON

Along with falafel, **hummus** is one of the Mediterranean's most recognisable legume-based dishes and a striking example of how a regional culinary tradition can become a global food.

In Arabic, hummus (حمص) simply means "chickpeas", while the full name hummus bi tahini refers to chickpeas blended with sesame paste. Although its precise birthplace remains debated, recipes combining chickpeas, tahini, lemon, and spices appear in medieval Middle Eastern cookery, and the dish became deeply rooted in the Levant and the wider southern and eastern Mediterranean.

Rich in plant protein, fibre, complex carbohydrates, unsaturated fats, and minerals, hummus is both nourishing and affordable. Served with bread, shared at family tables, offered to guests, or eaten as part of an Arabic mezze platter mezze, it embodies hospitality, conviviality, and everyday continuity.

Today, it carries local traditions into a global food culture increasingly drawn to healthy, plant-based eating.



BRIEFS

Study: Native Beans Deliver Top Returns

Native legumes are an overlooked economic powerhouse in Mediterranean agriculture. According to a recent socioeconomic study conducted as part of the MEDIET project and spanning 20 case studies in Albania, Serbia, Algeria, Morocco, Mauritania, Syria, Jordan, and Tunisia, selected native legumes (chickpeas, lentils, beans and broad beans) delivered positive returns for farmers. Notably, beans and broad beans generated the highest gross profits – even when production costs were higher.
These findings overturn the common perception that traditional varieties persist mainly for cultural reasons or public support. Instead, native legumes emerge as economically sustainable crops that bolster local food systems while providing environmental and social benefits. Yet, as researchers highlight, markets and policies still fail to fully recognize the value of these crops, leaving a vital Mediterranean resource underappreciated.

A Community Lab to Unlock Local Value

In Tricase, nestled in southern Italy's Salento region, Food4Health demonstrates how local produce can go beyond the farm gate, finding renewed value and purpose in the marketplace.
At the centre is the Community Lab: a vibrant, shared hub where small farmers and fishers gain access to equipment, expert guidance, and hands-on learning. Here, they transform and preserve a diverse array of products – honey, fruit, vegetables, legumes, herbs, and fish – unlocking new opportunities for their businesses.
For micro and small enterprises – often constrained by limited investment and infrastructure – the Lab is a game-changer: enabling them to turn fresh, local ingredients into longer-lasting, value-added foods.
But the model goes further, cultivating a thriving community of practice. Farmers and fishers team up with food operators, researchers, and technical experts to develop innovative products, exchange knowledge, and strengthen local supply chains. Acting as a business incubator, the Lab nurtures entrepreneurship through practical workshops, skill-building events and valuable networking opportunities.



BEANS: a network for change

by Teodoro Miano & Mouïn Hamzé

Across the Mediterranean, efforts to promote legumes have long been fragmented, spread across research projects, national policies, private initiatives, and local farming communities. What was missing was a platform capable of connecting these efforts into a coherent, visible, and scalable movement.

The BEANS Network responds to this gap. Launched by CIHEAM in 2025, BEANS is emerging as a Mediterranean-wide alliance dedicated to repositioning legumes within sustainable food systems. Its ambition is simple but strategic: to move legumes from a niche crop to a central pillar of the region's agricultural and nutritional future.

At its core, BEANS acts as a bridge. It connects scientific knowledge with practical application, linking plant breeding, agronomy, and environmental research to the realities of farmers facing water scarcity, climate variability, and economic uncertainty. It also connects production with markets, supporting value chain development, processing innovation, and new product opportunities that make legumes more accessible and attractive to consumers.

Equally important, the network fosters dialogue across borders. Mediterranean countries share similar constraints, limited water resources, fragile ecosystems, and increasing dependence on imports, but also a common heritage of legume-based diets and farming systems. By facilitating exchange and cooperation, BEANS aims to transform these shared challenges into sustainable solutions.

In just one year, BEANS has attracted a significant community of international organizations, research and public institutions from most Mediterranean countries, alongside experts and specialists. Private sector actors are also showing growing interest. Membership has already reached 100 institutions and experts, and the network is implementing a number of tasks based on a clear annual Action Plan.

Looking ahead, the strength of BEANS lies in its ability to scale. By aligning research, policy, and private sector engagement, it creates the conditions for legumes to become not only environmentally relevant, but also economically viable and socially desirable. In a region searching for resilient food solutions, BEANS is more than a network—it is an enabling platform for change.

BEANS' JOURNEY

The journey

The **BEANS Meta Network** (Boosting Euro-Mediterranean Agri-food through Networked Systems) was announced in **Bari** in **March 2024**, following the **International MEDIET Seminar**.
Building on shared analyses and a series of specialised seminars, the BEANS Meta Network was established in **2025** and officially launched on **5 June**, with seed funding from **CIHEAM Bari** and the support of the **Italian Ministry of Foreign Affairs and International Cooperation** (MAECI) and CIHEAM.

PULSES IN THE NET

BEANS aims to bridge the gap between knowledge, policy and practice across the Mediterranean, with a focus on cultivar improvement, nutrition, and climate-smart agriculture.
The network brings together research, policy advocacy, capacity building and knowledge sharing.

Key goals

BEANS **connects researchers, policymakers and practitioners across the Mediterranean** to share knowledge on legumes, foster research and innovation, and **develop joint initiatives for international funding**, with a focus on the green transition, nutrition, health and environmental sustainability.









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CIHEAM BARI

FEED

PULSES AGAINST DIABETES: A REGIONAL RESPONSE

by Mouin Hamzé

Diabetes is becoming one of the MENA region's most serious public-health challenges. Around 85 million adults are living with the disease—14.4% of the global total—yet the region accounts for only 3.4% of worldwide diabetes-related health expenditure, around USD 35 billion a year. This imbalance makes prevention especially important.

Changing lifestyles and diets are part of the problem. Reduced physical activity and greater consumption of highly processed foods rich in sugars, refined carbohydrates and unhealthy fats are contributing to the rise of type 2 diabetes and other non-communicable diseases.

> **Legumes bring familiar foods into the fight for healthier diets.**

Here, legumes offer a practical and culturally familiar resource. Lentils, chickpeas, beans, peas and faba beans are deeply rooted in the region's food traditions and provide plant protein, fibre and essential minerals. Their low glycaemic index and high fibre content can support better blood-sugar control, weight management and cardiovascular health as part of a balanced diet.

Their value also extends beyond individual health. Legumes are affordable, widely accessible and can support local agriculture and more sustainable food systems. In a region facing a heavy diabetes burden and limited health expenditure, such preventive choices matter.

Progress will require coordinated action: stronger dietary guidance, support for local farmers, greater use of legumes in school and workplace meals, and public campaigns that reconnect healthy eating with regional food heritage.

The challenge is serious, but some of the most effective solutions may already be part of the region's own culinary traditions.

Diabetes in MENA – A Growing Crisis

85 MILLIONS
adults living with diabetes

14.4%
of the world's diabetes cases

3.4% ONLY
of global diabetes-related health spending
≈ USD 35 billion/year

Why Legumes Matter

LOW GLYCAEMIC RESPONSE
helps support better blood-sugar control
AFFORDABLE & ACCESSIBLE
make healthier diets easier to adopt
ROOTED IN LOCAL FOOD CULTURE
support prevention through familiar foods



Source: IDF (International Diabetes Federation) Regional Report 2025

BEANS & MEAT: A REALITY CHECK

by Rossella Tatoli

Promoting legumes does not mean setting them against meat. Both have a place in a healthy diet, provided their strengths, limits and appropriate frequency of consumption are understood.

Although legumes have excellent nutritional properties, they cannot be considered a perfect substitute for meat.

A comparison between a 100 g portion of lean veal and the same amount of cooked lentils shows that the two foods have different energy and nutritional profiles. Veal is mainly a source of high-quality protein and highly bioavailable iron, while it contains no carbohydrates or dietary fibre. Lentils, by contrast, derive much of their energy from carbohydrates and provide fibre, potassium, folate and other minerals.

They are also a valuable source of protein and iron, but some distinctions matter. Iron from animal foods is mainly haem iron, a form the body absorbs more easily.

Iron from plant foods is non-haem iron, which is absorbed less efficiently, generally between 2% and 10%. Its absorption can be improved by combining legumes with foods rich in vitamin C, such as lemon, tomatoes, peppers or citrus fruit.
No single food determines the quality of a diet.

What matters is the wider dietary context: the combination of foods, eating habits and lifestyle.
A healthy, varied and balanced diet remains the best way to provide the body with all the nutrients it needs.

Meat and legumes: different nutritional strengths

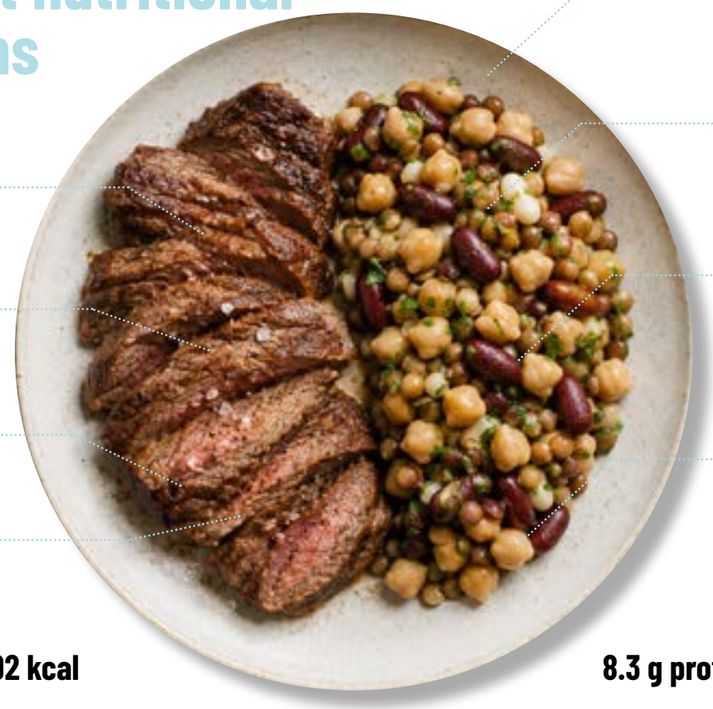
A 100 g comparison: lean veal vs cooked lentils"

Protein-rich:
provides 20.7 g of protein per 100 g

A source of highly bioavailable iron:
its haem iron is more readily absorbed by the body

Naturally fibre-free:
contains no dietary fibre or carbohydrates

Provides key minerals:
including zinc and phosphorus



Protein from plants:
provides 8.3 g of protein per 100 g

Naturally rich in fibre:
contributes 4.6 g of dietary fibre

A source of folate:
provides vitamin B9, important for normal cell function.

More than protein:
supplies carbohydrates, potassium and other minerals.

20.7 g protein · 92 kcal

8.3 g protein · 4.6 g fibre



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HOW TO BRING LEGUMES BACK INTO OUR DIET

Three Experts Discuss

Sandro

Welcome back to CIHEAM Bari Files. Today we're talking about something humble yet surprisingly powerful: beans, lentils and chickpeas. Reine, Roberto, you both know that these staples are increasingly being recognised as true stars of the Mediterranean Diet. Your expertise has also contributed to the debate around updating the Mediterranean Diet Pyramid, with a stronger emphasis on legumes.

Reine

Absolutely, Sandro. And they deserve the spotlight. Legumes are rich in fibre and protein and, when combined with cereals, can contribute to a balanced and sustainable diet. They're nutritious, affordable, and they support farmers while helping keep culinary traditions alive.

Roberto

Exactly. From an environmental perspective, legumes have a lot going for them. They generally require less land and generate fewer emissions than animal-source proteins. Many also improve soil fertility through biological nitrogen fixation, which can reduce the need for synthetic fertilisers. That is a major advantage for farmers and for more resilient farming systems.

Reine:

And let's not forget affordability. Legumes are among the most accessible ways to provide nutritious meals, particularly for families and communities facing food insecurity. At the same time, they can strengthen local economies and preserve culinary heritage.

Sandro

So the question is: how do we make legumes part of everyday life again?

Roberto

The real challenge is the food environment. Legumes need to be as easy to buy, prepare and enjoy as many convenience foods. That is where innovation comes in: legume-based flours, ready-to-cook mixes, snacks and quick-preparation meals can all make a difference.

Reine

And we need to speak the language of younger generations. Digital tools can help. Traditional recipes can be shared through apps, social media or even cooking challenges that bring together grandparents and young people. The point is to make heritage feel contemporary, engaging and relevant.

Roberto

Exactly. Digital storytelling, school projects and cooking labs can help bridge the gap between science and the kitchen. A simple bowl of beans can become a way to talk about health, sustainability, local economies and food culture all at once.

Sandro

Yet despite all these advantages, many people are still eating fewer legumes than they could.

Roberto

Which means we need to create food environments where legumes are easy to find, quick to prepare, tasty and appealing.

Reine

Yes. It's time to bring legumes back into our kitchens. By sharing recipes across generations and countries, using digital tools and engaging young people through food education and science outreach, we can turn ancient traditions into contemporary habits.

Sandro

Then perhaps that is the key message: legumes are more than ingredients. They are a bridge between our past and our future. By combining tradition, innovation and creativity, we can bring them back to the centre of Mediterranean life, where they truly belong. Expanding the range of legume-based foods also means developing new functional ingredients, including flours and semolinas derived from pulses.



Lemon meringue tart made with chickpea flour as part of a student project-based learning activity at Institut Agro Montpellier, France. Photo: Marie Dumain.

RESHAPING THE FOOD ENVIRONMENT: A CIHEAM BARI RECIPE

by Roberto Capone

The food environment is the space where food supply chains and consumers meet. It is shaped by physical, economic, socio-cultural and political factors that influence what food is available, how much it costs, how safe and accessible it is and, ultimately, what people choose to eat.

But this relationship does not work in one direction. Consumers are not simply the final step of the food chain: through their choices, they can also influence what is produced, how it is produced and which products find a place in the market. Growing demand for healthier and more sustainable food can send signals back through the supply chain, encouraging producers to adopt more sustainable agricultural, fishing and aquaculture practices.

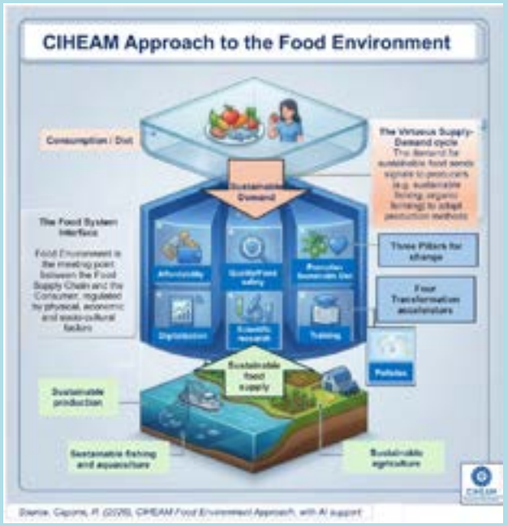
This is the basis of what the CIHEAM approach describes as a virtuous supply-demand cycle: sustainable production expands the availability of better food choices, while sustainable demand creates the conditions for those production models to grow.
Making this cycle work, however, requires an enabling food environment. Three areas are particularly important: affordability, ensuring that sustainable choices are economically accessible; quality and food safety, building trust in what reaches the consumer; and the promotion of sustainable diets, helping people translate knowledge into everyday food choices.

Transformation also depends on a set of accelerators. Scientific research can provide evidence and new solutions; digitalisation can improve information and connections across the food system; training can strengthen skills among both producers and other actors; and policies can create the conditions for change at scale.

The goal is therefore not simply to produce food more sustainably, or to persuade consumers to eat differently. It is to connect both sides of the system so that sustainable supply and sustainable demand reinforce each other.

THE APPROACH AT A GLANCE

The CIHEAM Food Environment Approach shows how three interconnected pillars and four transversal tools can work together to create food environments that empower consumers to make healthier, more sustainable choices and, in turn, generate sustainable demand.



The full framework and analysis will soon be published in New Medit https://newmedit.ciheam.org/

DIVERSITY AND COOKING PRACTICES UNDER THE MICROSCOPE

by Antonio Trani & Ramia Albakain



50 samples reveal the rich potential of Mediterranean legumes Future

How nutritious a legume is depends not only on the variety itself, but also on what happens before it reaches the plate. Recent analyses carried out within the MEDIET Project help clarify both sides of that equation: the nutritional diversity found across Mediterranean legumes, and the effects of common household preparation methods such as soaking and cooking.

Researchers examined more than 150 samples from 15 Mediterranean countries, including lentils, chickpeas, common beans, faba beans and cowpeas. Many were local varieties maintained by farmers over generations and adapted to different soils and climates. The analyses revealed substantial variation in protein, dietary fibre and micronutrient content, confirming that "legumes" are far from a nutritionally uniform category.

That diversity matters. It can help identify varieties better suited to specific nutritional needs, processing uses or local food systems. A legume with a higher protein content, for example, may be particularly valuable in plant-rich diets, while other varieties may stand out for fibre or micronutrients.

Preparation can further improve the nutritional value of legumes.
Soaking and cooking significantly reduce several antinutritional compounds, including trypsin inhibitors and saponins, which can interfere with protein digestion or nutrient absorption. Phytates are more resistant, but their levels can also decline to some extent during processing.

> **Legume diversity matters from seed to plate.**

Heat treatment improves protein digestibility by altering protein structure and making it more accessible to digestive enzymes. Cooking and subsequent cooling can also increase resistant starch, a form of carbohydrate that escapes digestion in the small intestine and is fermented in the colon, where it can support gut health and metabolic function.

The practical message is straightforward: traditional preparation methods are not merely culinary habits. They can materially improve the nutritional quality of legumes.
These findings also suggest a broader use for nutritional analysis. Better knowledge of how varieties differ, and how processing alters them, can guide breeding, product development, dietary advice and food preparation. It can help match the right legume to the right purpose—from household cooking to school meals, food processing or new plant-based products.

For a region seeking affordable, nutritious and sustainable foods, that distinction matters. The value of legumes does not lie only in promoting greater consumption, but in understanding which varieties perform best, how they should be prepared and how their nutritional potential can be used more effectively.Among them is the BEANS Community, initiated by CIHEAM Bari to bring farmers, researchers, companies, civil society organizations and policymakers around the same table.

Its premise is simple: legumes will only fulfil their potential if the actors shaping the food system share knowledge, build stronger value chains and work towards a common vision.

That also means designing agricultural and post-harvest practices that add value locally, improve returns for producers and make legume cultivation economically worthwhile.

MYTHBUSTERS

MYTH: BEANS MAKE YOU GAIN WEIGHT BECAUSE THEY ARE HIGH IN CARBS.
FACT: Their fibre and resistant starch help you feel full for longer. In the right portions, legumes fit perfectly into a healthy diet—even when managing weight.

MYTH: LEGUMES ALWAYS CAUSE BLOATING AND ARE HARD TO DIGEST.
FACT: Some carbohydrates ferment in the gut and may cause gas. Smaller portions, peeled legumes or well-cooked legumes can improve tolerance.

MYTH: LEGUMES ARE JUST "POOR MAN'S MEAT" WITH INCOMPLETE PROTEIN.
FACT: They are valuable plant-protein foods. Pairing legumes with cereals, such as rice or pasta, provides a well-balanced mix of essential amino acids.

MYTH: CANNED LEGUMES LOSE ALL THEIR NUTRIENTS.
FACT: Canned pulses retain most of their protein, fibre and minerals. Some heat-sensitive vitamins may decrease; rinsing helps remove excess salt from the liquid.

MYTH: SOAKING DRIED LEGUMES IS A WASTE OF TIME.
FACT: Soaking helps rehydrate legumes, shortens cooking and can improve digestibility. Together with cooking, it also reduces compounds that can limit mineral absorption.







SUPERFOOD FOR A SUSTAINABLE LIFE

by Nahla Hwalla

Legumes—beans, lentils, faba beans, chickpeas and peas—are among the simplest tools available for making food systems more sustainable. Their nutritional value is well established, but their environmental role is just as important: they require comparatively few resources, support soil fertility and can help reduce the pressure that food production places on land, water and climate.

Their greatest advantage begins in the field. Legumes have a natural ability to fix atmospheric nitrogen through their association with soil bacteria. In practice, this means they can reduce the need for synthetic nitrogen fertilisers while improving soil fertility for subsequent crops. When included in crop rotations, they can also contribute to healthier soils, greater biodiversity and more resilient farming systems.

Their environmental footprint is generally much lower than that of animal-source proteins. Producing pulses requires less land and water and generates fewer greenhouse-gas emissions than livestock production. In regions already facing water scarcity and soil degradation, this matters. The Mediterranean is one of the areas where climate change is placing the greatest pressure on agriculture, making crops that can perform under difficult conditions increasingly valuable.

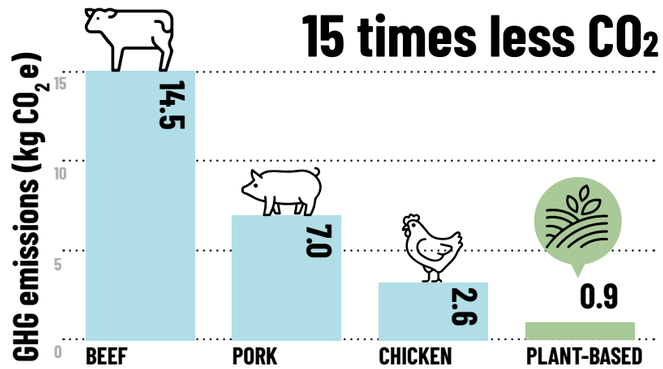
Legumes also offer an economic advantage. They remain among the most affordable sources of protein and can be stored for long periods with limited losses, helping households and food systems reduce waste and improve food security. Their value therefore lies not only in what they contain, but also in how efficiently they can be produced, transported and consumed.

Mediterranean food culture already offers a rich foundation on which to build. Chickpeas, lentils, beans and faba beans are deeply embedded in traditional dishes across the region. The challenge is not to invent a new way of eating, but to adapt familiar foods to contemporary tastes and lifestyles. From lentil-based dishes such as mujaddara to chickpea stews, spreads and street foods, traditional recipes can be reinterpreted without losing their cultural roots.

This is where the environmental argument becomes particularly powerful. A more plant-rich diet does not require the elimination of meat, but it can mean eating legumes more frequently and using animal-source foods more selectively. Such a shift is both realistic and consistent with the traditional Mediterranean dietary pattern.

Legumes bring together several qualities that food systems increasingly need: low environmental impact, affordability, storability, adaptability and strong cultural acceptance. Their contribution to a more sustainable future may therefore depend less on discovering new benefits than on recognising—and scaling up—the ones they already provide.

PLANT-BASED MEAT vs. ANIMAL MEAT



enviromental impact*

-89%

1 kg of plant-based protein
VS.
1kg of animal protein

Compared to animal meat, plant-based meat production results in...

-89% CO_2e
GHG emissions

-79%
land use

-95%
water use

-89%
air pollution

-79%
*water pollution***

**Averaged across 18 environmental impact categories, comparing three types of plant-based meats (two with pea protein bases and one with a soy protein base) to three types of animal meats (beef, pork and chicken). To view relative impact calculation for all 18 categories, reference Table 5-1 in the full LCA report (Bonaies et al.2024) **Averaged across two impact categories (freshwater eutrophication and marine eutophrication).*

CLIMATE-SMART BEANS AT WORK

Bean plants also have a natural ability to absorb nitrogen from the air and convert it into nutrients in the soil. This means farmers need fewer synthetic fertilisers, and soils that have been depleted by years of cultivation gradually recover their fertility.

Across Africa, diverse bean varieties developed through PABRA are delivering on three fronts at once: better nutrition, stronger farmer incomes, and less pressure on the land.



PABRA's new legume varieties can save soil and fuel

In Tanzania, a farmer walks through rows of a beans, displaying a variety that did not exist a generation ago: it grows reliably despite shifting weather patterns, cooks faster, and is more nutritious. This variety is just one of many developed through the Pan-Africa Bean Research Alliance (PABRA), in partnership with national agricultural research organisations across the region.

The scale of the challenge in East and Southern Africa is significant. Rising climate stress has cut common bean yields by 43% and reduced the grain's natural iron content. In cereal-dominated diets, beans are a major source of protein, carbohydrates, and micronutrients — with consumption reaching 30 kg per person per year in some countries.

By developing and distributing climate-smart, nutrient-dense varieties— such as RWR 2154 and NUA 45—PABRA and its national partners have reached 2.7 million smallholders, 58% of whom are women. Local entrepreneurs are now turning these diverse harvests into nutrition-packed composite flours that stock supermarket shelves and supply school feeding programs, reaching over 2.7 million students in 2024 alone.

While the nutritional victory is clear, the environmental impact is less visible but equally important. 90% of households in the region rely entirely on firewood for cooking. Because these diverse new bean varieties are bred to boil quickly, they shorten cooking times.

This simple genetic trait translates directly into fewer trees cut, lowering energy costs for families and easing the deforestation pressures threatening African ecosystems.

CONTRIBUTORS

This article was developed with contributions from Sylvia Kalemera, Justice Munthali, Napoleon Kajunju, Yohane Chideya and Jean Claude Rubyogo, from the Pan-Africa Bean Research Alliance (PABRA).

ABOUT PABRA

The Pan-Africa Bean Research Alliance (PABRA) is a research and development network working to improve bean production, nutrition and livelihoods across Africa.
PABRA is part of the Alliance of Bioversity International and CIAT, a CGIAR research center.



WHEN PRICE IS NOT THE MEASURE

by Giorgos Prekatsakis

Last summer in Kroustas, a village in eastern Crete, I was reminded of how food can embody both memory and rupture. The women there still prepare Eftazymo, a traditional bread whose name means "seven kneads" but likely derives from aftozymo, or self-leavened. Its secret lies in a fermented chickpea mixture that allows the dough to rise without yeast, a process once attributed to divine grace. Prepared during the mid-August fasting period, Eftazymo accompanied grapes and figs, nourished families and marked rituals from Easter to weddings. Its fermentation, dominated by native Bacillus and Clostridium species, gave it a distinctive aroma and flavour.

Yet walking through the village, I realised that this ecosystem has fractured. Chickpeas are now imported, perhaps from India or Türkiye, stripped of their local microbiome. The circular threshing floors lie unused, while traditional farming has been eroded by monocultures and tourism. The feast of August 15 still draws thousands, but the seed is missing. Neither chickpeas nor other legumes are grown in most villages; cultivation is deemed unprofitable. Even livestock diets rely on cheap imported protein. Food sovereignty has faded, replaced by commercialised agriculture and globalised supply chains.

Historically, agriculture was built on reciprocity and the careful use of local resources, not simply on surplus for trade. Greece once nurtured countless legume landraces, each adapted to its soil and climate, resilient to stress and genetically diverse. These evolving populations carried distinct identities, shaped by farmers' empirical selection and natural processes. Human societies coevolved with these varieties; plants and their microorganisms shaped us as much as we shaped them. Importing chickpeas cheaply is therefore not merely an economic choice. It also reshapes culture, environment and social bonds.

This dialectical relationship between humans and plants is crucial. As Levins and Lewontin remind us: "Natural selection is not a consequence of how well the organism solves a set of fixed problems posed by the environment; on the contrary, the environment and the organism actively codetermine each other." (The Dialectical Biologist)

> **Legumes are not passive commodities**



Legumes are not passive commodities but active elements of our physiology, culture and biodiversity.
Farmers once evolved crops for utility, taste and adaptation; corporations now increasingly shape them according to market logic.

The question, then, is not simply why we should grow something locally if it can be produced more cheaply elsewhere. It is what is lost when price becomes the only measure of value.

Is biodiversity worth preserving if it does not maximise profit? Are local varieties, farming knowledge and culinary traditions expendable because the market can replace them more cheaply? The answers may seem obvious. They are not.

Henry David Thoreau once wrote in *Walden*: "I have tasted but little bread in my life. It has been mere grub and provender for the most part. Of bread that nourished the brain and the heart, scarcely any."

Perhaps that is the distinction that matters most.

CAN LEGUMES BECOME COOL?

by Yasmine Seghirate



How a traditional staple can reclaim its place in modern markets

The challenge is no longer to prove that legumes are good for people or for the planet. The evidence is already there. The real question is how to make them desirable again.
Across the MENA region, pulses are still deeply rooted in everyday food culture. Hummus, bissara, mujaddara, roasted chickpeas and bean stews remain familiar and widely recognised. Yet familiarity is not always enough. For many younger and urban consumers, legumes can still feel old-fashioned, time-consuming or disconnected from modern lifestyles.

Changing that perception requires a new narrative. Legumes need to be presented not as food from the past, but as ingredients for the future: convenient, creative, versatile and relevant. Ready-to-cook meals, protein-rich snacks, plant-based recipes, street food, new formats and contemporary gastronomy can help move pulses beyond the traditional bowl and into new consumption occasions.

Communication matters just as much as product innovation. Public campaigns, social media, schools, chefs, retailers and food brands can all help reposition legumes as attractive rather than merely virtuous. The aim should be to connect heritage with aspiration, showing that the same ingredients found in traditional dishes can also become part of a modern, urban and health-conscious food culture.

Markets must evolve too. Farmers will not increase production unless demand is visible and stable. Stronger value chains, investment in processing, public procurement and incentives for innovation can help create that demand. School and workplace meals are particularly powerful tools because they can normalise legumes as part of everyday eating rather than as an occasional "healthy" option.

Youth should be central to this strategy. Legumes offer opportunities for entrepreneurship, food innovation and local value creation—from new snacks and convenience foods to digital storytelling and food-tech ventures. If younger generations become producers, communicators and consumers of new legume-based products, the sector can move from preservation to reinvention.

Regional cooperation can amplify this shift. Platforms such as the BEANS Network can help connect scattered initiatives, share successful models and build a stronger Mediterranean market for pulses.

Making legumes "sexy" again is ultimately about changing what they represent: not nostalgia, sacrifice or a substitute of last resort, but taste, creativity, opportunity and modern Mediterranean identity.

Key Narratives to Change Perceptions

Youth & Innovation:
young entrepreneurs turning pulses into new products and business ideas.

Modern Mediterranean Food:
traditional ingredients reimagined for contemporary lifestyles.

Convenience:
making legumes easier to buy, prepare and eat.

Value Creation:
connecting farmers, processors, retailers and consumers.

Regional Collaboration:
using networks such as BEANS to scale what works.



WHEN CHICKPEAS BECOME A SNACK

By Marina Mefleh

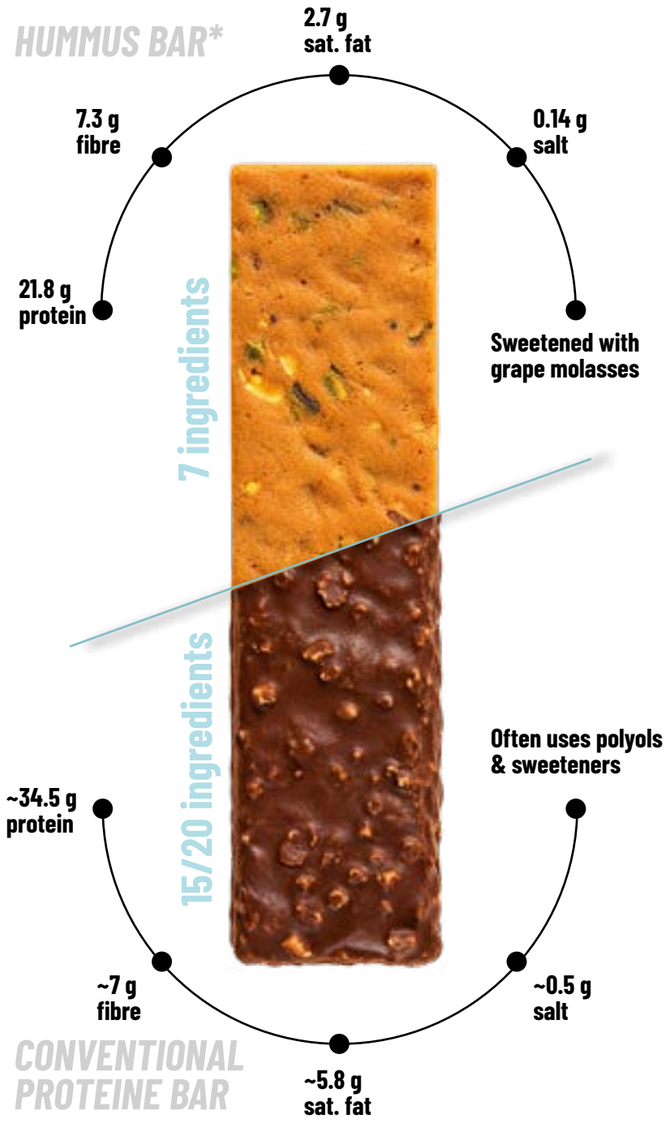
Few plant foods provide an ideal balance of essential amino acids on their own. Chickpeas come close; sesame helps complete the picture. This is hardly a new discovery. It is part of the nutritional logic behind hummus, a pairing enjoyed across the Levant for centuries. The Hummus Bar simply gives that combination a modern, sweet and portable form.

The bar brings together local chickpeas, tahini, pistachios, almonds, grape molasses and cardamom. Each ingredient contributes more than flavour. Chickpeas provide plant protein and fibre. Because that fibre remains naturally embedded in the food matrix, it can help moderate the rise in blood glucose after eating while promoting satiety. Tahini, pistachios and almonds add predominantly unsaturated fats, while cardamom contributes aroma and naturally occurring antioxidant compounds. Sweetness comes from grape molasses, a traditional ingredient that also contains polyphenols.

What distinguishes the bar is not simply how much protein it contains, but where that protein comes from. Many protein snacks rely on isolated whey, pea or soy proteins and highly processed formulations. The Hummus Bar follows a different route, building its nutritional profile around whole or minimally processed ingredients long associated with Mediterranean diets. According to its nutritional composition, it meets EU criteria for claims including "high in protein", "high in fibre" and "low in salt", while also providing minerals such as iron, calcium and potassium. EU rules require such claims to meet defined compositional thresholds.

The idea also connects the finished product back to the field. Chickpeas, like other legumes, form symbiotic relationships with nitrogen-fixing bacteria, reducing their dependence on nitrogen fertilisers and contributing to more diversified cropping systems. Their greenhouse-gas footprint is also considerably lower than that of many animal protein sources. Comparative global data put beans and peas well below beef when emissions are measured per 100 grams of protein. Ten thousand years after chickpeas first entered human diets, the principle remains surprisingly familiar: combine simple ingredients intelligently, and an ancient food can find an entirely new place in modern life.

TWO BARS TWO FORMULAS



**Hummus Bar values are based on the producer's nutritional declaration. Conventional protein bar values are representatives of whey-based bars currently marketed in Europe.*

FROM LEGUME FARMING TO FOOD INNOVATION



Inside Andriani, a Company Rethinking Pulses for the Market

For Andriani, legumes are more than a passing food trend. They are a cornerstone of what the future of food might look like. The Apulian company has built its business around their potential, bringing together farming, research and innovation to explore what these humble crops can offer far beyond the traditional plate.

"Over the past few decades, legumes have steadily gained a central role in scientific and nutritional debate," says Rossella Labarbuta, Head of R&D at Andriani, based in Gravina in Puglia, near Bari. ***"They are now considered among the most promising raw materials for the future of food because they combine nutritional value, sustainability and technological innovation."***

Their appeal begins with nutrition. Legumes provide plant protein, fibre, vitamins and minerals, while fitting neatly with recommendations for a broader mix of protein sources. But their value extends beyond what ends up on the plate. Their biological diversity and technological properties are making them increasingly useful to a food industry seeking new ways to improve both nutrition and functionality.

That diversity makes the choice of raw material critical. ***"Not all varieties are the same,"*** Ms Labarbuta says. ***"The choice depends on several factors, including protein content, starch composition, functional properties, sensory profile and yield."*** A variety suited to flour production, for instance, may be less appropriate for a plant-based product or a formulation designed to deliver greater nutritional value.

Research therefore plays a central role in matching varieties to applications. Beyond their macronutrients, legumes contain bioactive compounds, including polyphenols, with antioxidant properties and potential cardiovascular and metabolic benefits. For food manufacturers, meanwhile, their attraction lies in the combination of nutritional value and practical functionality.

This is particularly evident in gluten-free and plant-based foods. Legume flours and ingredients can raise protein and fibre levels in gluten-free formulations, while technological research can help address some of the category's perennial challenges, including texture, structure and sensory quality. In plant-based products, legumes can be used alone or combined with cereals and other plant sources. ***"Their different matrices can be used to develop products that combine taste, nutritional quality and sustainability,"*** Ms Labarbuta says.

Yet the story begins well before the factory gate. For Mattia Caravella, Andriani's Filiere & Food Transition Manager, the future of legumes depends on how effectively agriculture and industry work together.

"Growing legumes is no simple task," he says. Unlike some extensive cereal crops, legumes require close monitoring throughout the growing season. Weather, weeds and fungal diseases can all affect yields. ***"The role of the supply chain is precisely to strengthen the link between those who produce food and those who process it."***

That link matters for another reason: legumes can contribute to healthier agricultural systems. Crop diversification and rotation can help manage weeds and diseases while limiting the depletion of soil resources. Legumes also have a particular advantage underground. Through their symbiotic relationship with Rhizobium bacteria, they can fix atmospheric nitrogen, reducing the need for nitrogen fertilisation.

"***Diversification is the key to success,"*** Mr Caravella says. ***"Crop rotations have existed for thousands of years. Alternating botanical families on the same piece of land helps prevent a range of problems, from soil depletion to a greater incidence of weeds and disease."***

For Andriani, this makes the legume supply chain as much an agricultural project as an industrial one. Technical assistance, field monitoring and increasingly digital tools, such as weather stations, are being used to help farmers manage production more precisely.

The stakes extend beyond a single crop. Agriculture is both essential and increasingly exposed to climate risk. ***"Agriculture is one of humanity's most crucial economic sectors because it produces the food we eat, but it is also among the most vulnerable,"*** Mr Caravella says. ***"The effects of climate change are increasingly visible and affect primary agricultural production first."***



> **Diversification is the key to success**

> **Not all varieties are the same**

That is where Andriani's broader idea of a food transition comes in. Annamaria Todisco, the company's Head of Innovation, describes it as a shift towards a food system that places health, animal welfare and the planet more firmly at its centre.

The market appears to be moving in the same direction. Protein has become a powerful driver of food innovation, with high-protein products spreading across categories, from breakfast foods and snacks to desserts and yoghurt. At the same time, interest in plant-based proteins continues to grow, fuelled by concerns about nutrition, sustainability and the environmental cost of food production.
"If we look at supermarket shelves in Italy and across Europe, these trends have multiplied," Ms Todisco says. ***"The number of protein-focused products has increased in virtually every category."***

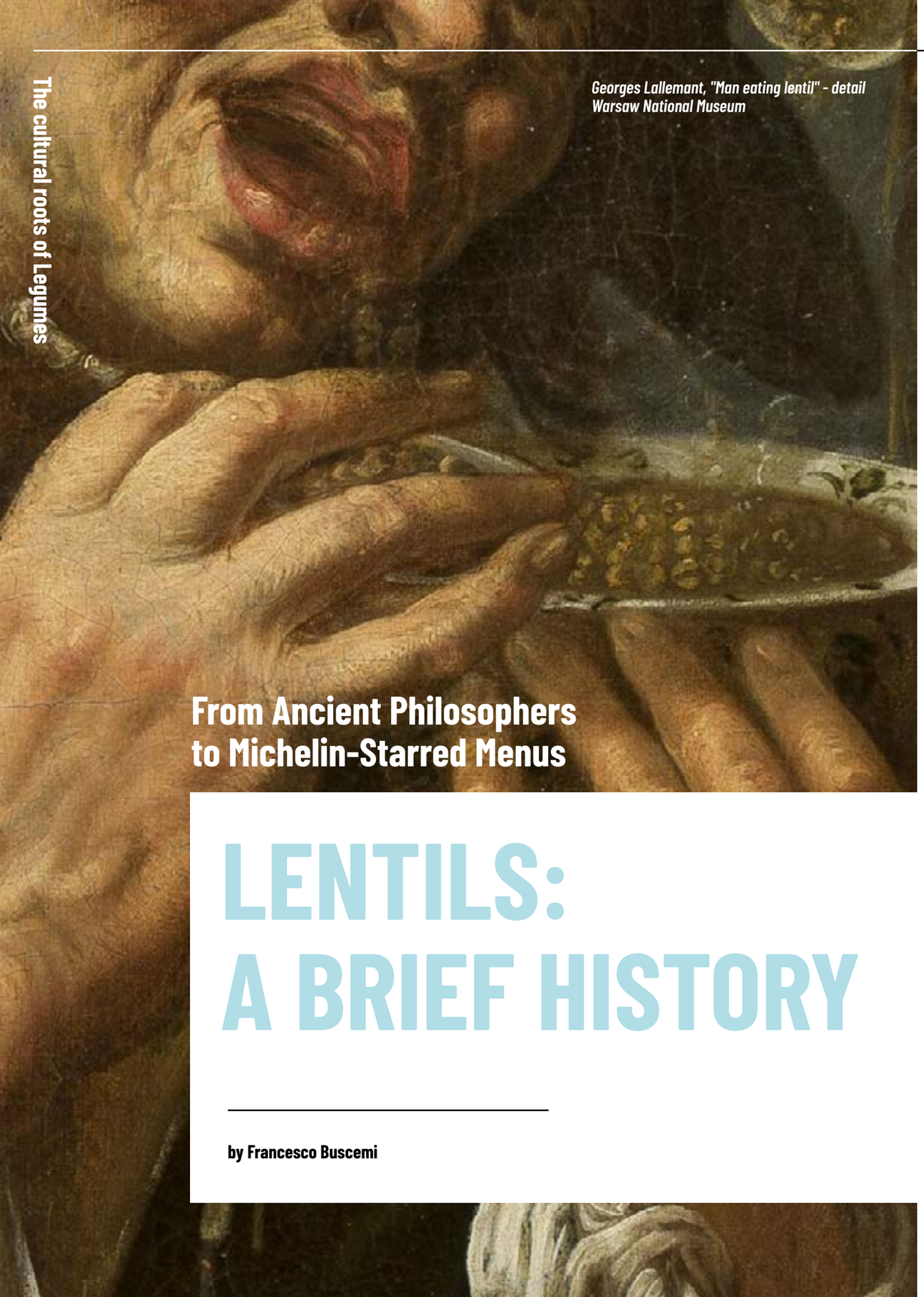
For Andriani, legumes offer a way to connect several of these trends rather than treat them as separate markets. The company began with legume-based pasta, but their potential now extends to snacks, bakery products and plant-based formulations. Even production by-products can find further uses, including in pet food.

The underlying bet is simple: the future of food will require not a single replacement for existing ingredients, but a more diverse system of crops, technologies and protein sources. Legumes sit at the intersection of many of those needs.

They are traditional yet adaptable, nutritionally dense yet versatile, and relevant both to what happens in the field and to what appears on the supermarket shelf.

For Andriani, that makes them more than an ingredient. It makes them a test of whether agriculture, science and food manufacturing can work together to build a more resilient food system.





Georges Lallemant, "Man eating lentil" - detail
Warsaw National Museum

From Ancient Philosophers to Michelin-Starred Menus

LENTILS: A BRIEF HISTORY

by Francesco Buscemi

Every lentil has two faces—not only physically, but culturally. Few foods have moved so easily between poverty and privilege, necessity and choice. Its story begins thousands of years ago in the Near East, where lentils were among the earliest crops gathered and cultivated by human communities. From there they travelled west. Archaeological remains found at Grotta dell'Uzzo in Sicily show that lentils were already part of Mediterranean food cultures thousands of years before Rome existed.

Among the Greeks, their double identity was already taking shape. Lentils fitted naturally into philosophical traditions that praised simplicity and restraint, while also remaining an inexpensive staple for ordinary people. They appeared frequently in soups, alone or with cereals, and were familiar enough to enter ancient medical writing as well. Hippocratic texts, for example, include lentil soup among dietary preparations prescribed in particular circumstances. What was humble food in Greece could also be profitable elsewhere. Egypt cultivated lentils extensively and traded them across the Mediterranean, turning a cheap staple into a valuable commodity.

The Romans preserved much of this ambiguity. In his Naturalis Historia, Pliny the Elder reports the belief that eating lentils encouraged an even temper—a remarkable promotion for such an unassuming pulse. Their low price also made them useful for rather less spiritual purposes. When Caligula had the obelisk now standing in St Peter's Square transported from Alexandria to Rome, the enormous ship carrying it reportedly used 120,000 modii of lentils as ballast. Through the Middle Ages, lentils kept both identities: food for those who could afford little, but also a natural choice for monks and others whose diets valued abstinence from meat. Their association with restraint persisted into later centuries, reinforcing a rivalry between lentils and meat that, in various forms, has never quite disappeared.

France proved more difficult territory. Lentils never inspired the enthusiasm there that they enjoyed elsewhere around the Mediterranean. Courtly cuisine tended to look down on them, and nineteenth-century gastronomy was hardly more generous. Alexandre Dumas devoted his monumental Grand Dictionnaire de Cuisine to the pleasures of the table, but lentils occupied a modest place in a culinary imagination capable of roaming much further afield.

Time, however, has been kind to them. Today lentils appear proudly on Michelin-starred menus and in inventive bistros, while varieties associated with particular landscapes are celebrated as expressions of terroir.

That may be the final twist in their long history. A seed once valued because almost anyone could afford it can now appear in some of Europe's most sophisticated kitchens. Lentils have not changed very much. Our idea of what makes a food valuable has..



lentil plant in an 1885 illustration

> **The seed stayed humble; our idea of value changed.**

LEGUMES IN MEDITERRANEAN FOODWAYS



Mediterranean legumes carry more history than their modest appearance suggests. Fava beans, chickpeas, lentils, peas, beans and grass peas have travelled with merchants, armies and migrants; fed cities and villages; and settled so deeply into local cuisines that they now serve as edible archives. Once dismissed as poor people's food, they are better understood as some of the basin's most durable cultural assets.

Their strength lies in repetition. Across the Mediterranean, different societies have used different pulses to perform much the same work: stretching scarce resources, marking religious observance, feeding crowds and preserving a sense of place. The recipes vary; the social function is remarkably constant.

In the Maghreb, chickpeas are woven into both daily cooking and ritual. Morocco's harira, traditionally served at sunset during Ramadan, is the best-known example. Combining chickpeas and lentils with tomato, herbs and often lamb or beef, the soup helps restore energy after a day of fasting. Variations appear across Algeria, Tunisia and Libya, while chickpeas also recur in couscous, stews and festive dishes. Their importance is nutritional, but also ceremonial: they help turn a meal into a shared act.

Farther east, Egypt gives the fava bean an even more prominent role. Cultivated along the Nile since antiquity, it remains the basis of ful medames, often described as the country's national dish. Cheap, filling and endlessly adaptable, ful is breakfast, street food and comfort food at once. Few ingredients better capture the continuity between ancient agriculture and modern urban life.
In the Levant, chickpeas reappear in a more cosmopolitan form. Hummus—made from chickpeas, tahini, lemon, garlic and olive oil—has become one of the region's most recognisable foods, and one of its most disputed. Its precise birthplace matters greatly to those who claim it, but less to the history it reveals. Hummus is the product of centuries of exchange across the eastern Mediterranean, refined through local practice and now firmly established in global food culture.

The Balkans tell a different story. White beans arrived from the Americas in the sixteenth century, yet were absorbed so completely that they now seem indigenous. In Serbia, Bosnia and Herzegovina, Montenegro and North Macedonia, pasulj—a slow-cooked bean stew—belongs to family tables, village gatherings and communal work. Meatless versions eaten during Orthodox fasting add another layer: restraint, faith and solidarity served from the same pot.

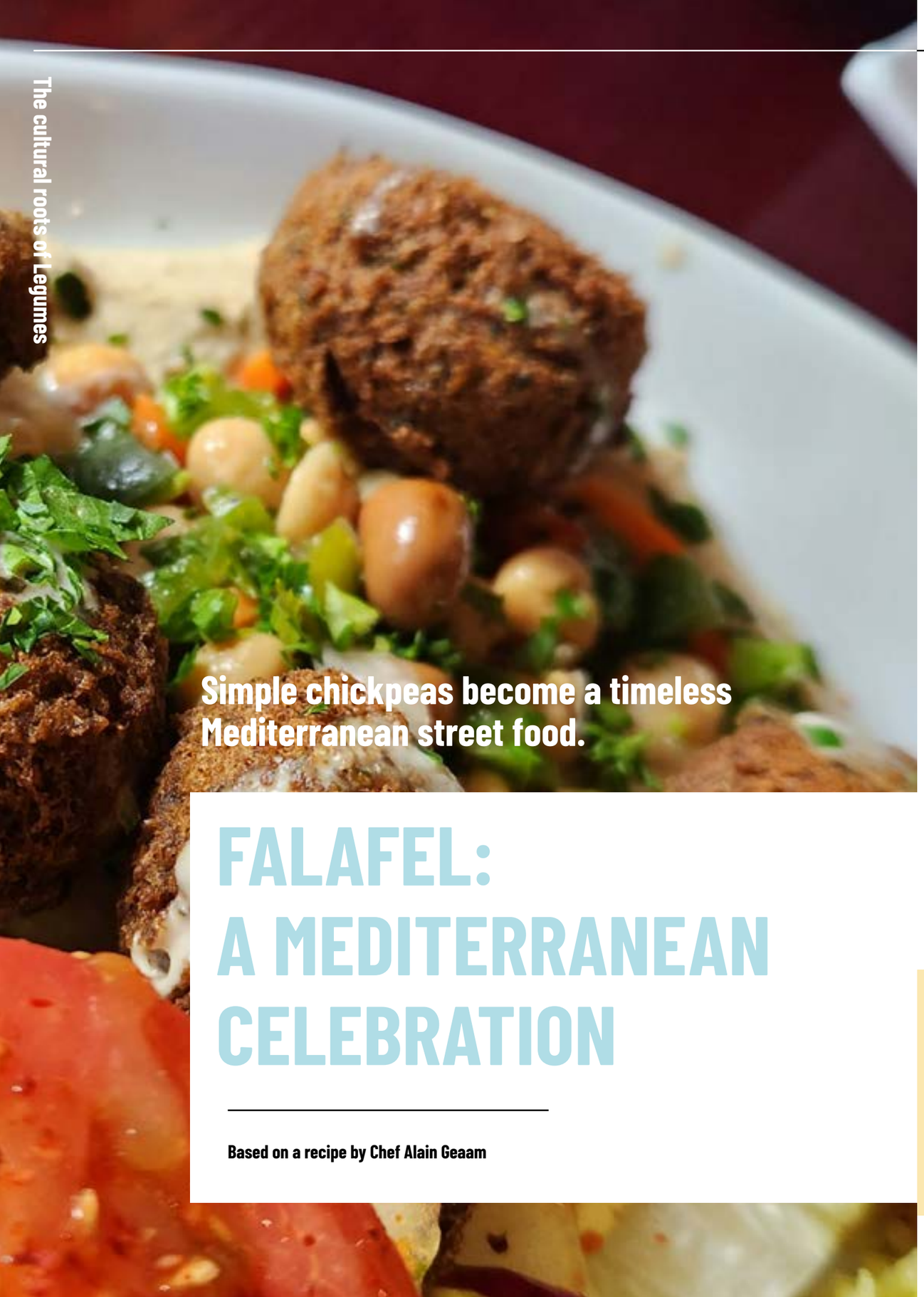
Italy's legumes are often tied less to migration than to landscape. The lentils of Castelluccio di Norcia, grown on the high plains of the Apennines, embody adaptation to difficult terrain. Their association with prosperity, especially on New Year's Eve, is a neat reversal: a food once linked to frugality became a symbol of abundance.

The grass pea, or cicerchia, carries a harsher memory. For centuries it sustained rural communities through drought and famine before falling into disrepute because of its link to lathyrism, a neurological disease associated with excessive and prolonged consumption. Better knowledge of preparation and dietary risk has since restored some of its reputation. Its return is not nostalgia so much as a reminder that resilient crops often disappear before their value is fully understood.
Spain closes the circle. In medieval Iberia, chickpeas crossed religious and social boundaries, appearing in Muslim, Jewish and Christian kitchens alike. The garbanzo became part of a shared culinary vocabulary shaped by coexistence, trade and migration.

Taken together, these foods show why legumes matter beyond nutrition. They are records of scarcity and ingenuity, of belief and exchange, of landscapes adapted to human need. The Mediterranean did not merely grow pulses; it built identities around them.



> **Across borders, pulses have shaped food, faith and identity.**



Simple chickpeas become a timeless Mediterranean street food.

FALAFEL: A MEDITERRANEAN CELEBRATION

Based on a recipe by Chef Alain Geaam

Falafel is more than a beloved street food, it is a timeless expression of how legumes have nourished Mediterranean communities for generations. Made from humble chickpeas, this recipe highlights how simple, plant-based ingredients can deliver both flavor and nutrition, supporting healthier and more sustainable diets.

Time, however, has been kind to them. Today lentils appear proudly on Michelin-starred menus and in inventive bistros, while varieties associated with particular landscapes are celebrated as expressions of terroir.

That may be the final twist in their long history. A seed once valued because almost anyone could afford it can now appear in some of Europe's most sophisticated kitchens. Lentils have not changed very much. Our idea of what makes a food valuable has..

INGREDIENTS (SERVES 4–6)

- **300 g dried chickpeas**
- **3 g baking soda**
- **½ onion, roughly chopped**
- **2 garlic cloves**
- **½ bunch fresh parsley**
- **9 g fine sea salt**
- **30 g falafel spice blend (cumin, coriander, paprika)**
- **20 g sesame seeds**
- **600 g vegetable oil for frying**

Nutrition Note

Chickpeas are rich in plant protein, fiber, and essential micronutrients, making falafel a smart alternative to meat-based dishes. Incorporating legumes like chickpeas into daily meals supports heart health, improves satiety, and aligns with the Mediterranean tradition of balanced, affordable, and sustainable eating.

Preparation

Soak the chickpeas overnight in three times their volume of water with the baking soda.
The next day, drain well. Using a meat grinder or food processor, blend the chickpeas with parsley, onion, and garlic until a coarse mixture forms.
Season with salt and spices, then let the mixture rest for 1 hour.
Shape into compact balls (about 30 g each).
Dip the tops in sesame seeds. Heat the oil to 180°C and fry the falafel for 4–5 minutes until golden and crisp.
Drain on paper towels and serve warm.

CREATIVE VARIATIONS

Halloumi-filled falafel: Stuff each ball with a small mixture of halloumi, herbs, and a pinch of sumac for a rich, tangy center.

Sesame sticks: Pipe the mixture into short logs, roll in sesame seeds, and fry for a crunchy twist.



MUJADDARA HAMRA: A TASTE OF MEMORY

By Mouïn Hamzé

In Kfarhatta, a village in south Lebanon, Maha stood in her kitchen, the wide balcony behind her opening onto the evening air. It had been only a few months since her mother Fatmé passed away, and tonight she was cooking mujaddara hamra for the first time on her own.

She sliced the onions and let them surrender slowly to the pan, far more slowly than she thought patience could allow. They collapsed into dark, sweet, almost-burnt rings. The brown lentils followed, earthy and humble, then the bulgur, nutty and grounding. Nothing else, because nothing else was needed.

The steam rose, carrying with it the scent of generations. Maha tasted it straight from the pot. As she looked around the empty room she knew her mother had been right: the dish is best be shared around a table, with brothers and sisters, family and neighbors. Mujaddara hamra became more than food, it became a bond, a story retold in every bite.

Though called 'red' it is a black dish, humble yet profound. It is delicious, yes, but also economic, a dish that sustains households through lean years and celebrations alike. Within it lies a comfort so deep, a taste of patrimoine, that you believe a person in a moment of real hunger, could trade almost anything for a single bowl.

For Maha, it was more than sustenance. It was memory, resilience, and the quiet echo of her mother's voice. In the wide apartment balcony where laughter could spill out into the night, she carried forward the lineage of women before her, those who had fed families, soothed grief, and marked time with lentils, onions, and bulgur.

And as she ate, she realized: the dish was not just food. It was a story, one she was now part of, one she would share again, spoon by spoon, bite by bite.



“A bowl of lentils can carry memory across generations.

WOMEN, RESILIENCE, AND LIVING FOOD HERITAGE

by Wafaa El Dikah

Arcross the Arab and Mediterranean region, legumes are more than ingredients. They are memory, identity and resilience served on a plate. Chickpeas, lentils, fava beans, peas and beans appear in dishes that travel from one shore of the Mediterranean to another: Lebanese mujaddara and hummus, Moroccan harira, Egyptian taameya, Tunisian chickpea stews, Italian pasta e ceci, Spanish lentejas guisadas and countless family recipes passed from mother to daughter.

Behind these dishes stand women, especially rural women, who have quietly shaped the region's food culture for generations. Their work begins long before a pot reaches the stove. In many villages, women choose the seeds, tend the fields, sort the harvest, dry and store the grains, transform them into food, and often sell them in local markets. They are also the storytellers of agriculture, passing on recipes, techniques and seedsaving traditions to children and youth. These traditions come alive in everyday scenes across the Middle East. In Egypt, Bahia rises before dawn in a village near Minya to stir a pot of foul that has simmered all night. By midmorning, children gather around her cart for warm beans and bread. For her, every bowl is more than breakfast, it is dignity, resilience and the quiet power of rural women who keep Egypt's food heritage alive.

In the village of Hezzine in Lebanon's North Bekaa Valley, Intissar walks through her chickpea and lentil fields with the confidence of someone who has learned the land by heart. Despite late rains and rising costs, she plants these crops every year because, as she says, "they take care of the soil and us." In the evenings, she cooks mujaddara and balila with her daughter, passing on stories, skills and the quiet pride of feeding a family from one's own land. At the weekly market, her sacks of legumes carry far more than a harvest, they carry memory, continuity and the hope of better days to come.

And in a village near Hama, Adla protects a wooden box of chickpea and fava seeds her mother saved before the war scattered their family. Food, she believes, keeps people connected when everything else feels uncertain. She dreams of a women's cooperative built on these seeds and recipes. "We have the hands," she says. "We just need the chance." Family farming remains the backbone of the region, and women are its heartbeat. Empowering them means preserving culinary heritage, strengthening local food systems and preparing the Mediterranean for a future where resilience will matter more than ever.

Khadija's Lentil Field: A Story of Resilience and Belonging

In Jibsheet, South Lebanon, Khadija saw her agriculture field as both livelihood and treasure. "Every hour in my lentil field resembles the world and the treasure," she used to say.

During the war and hostilities, she resisted leaving her land, convinced that the fields of lentils and olives carried the family's energy, care and hope.

Khadija's story became a painful reminder, following her tragic death with her family in the village where they had sought shelter, that land, legumes and olive trees are not only sources of food but also anchors of identity, dignity and belonging.

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