FOR IMMEDIATE RELEASE | May 2026 |

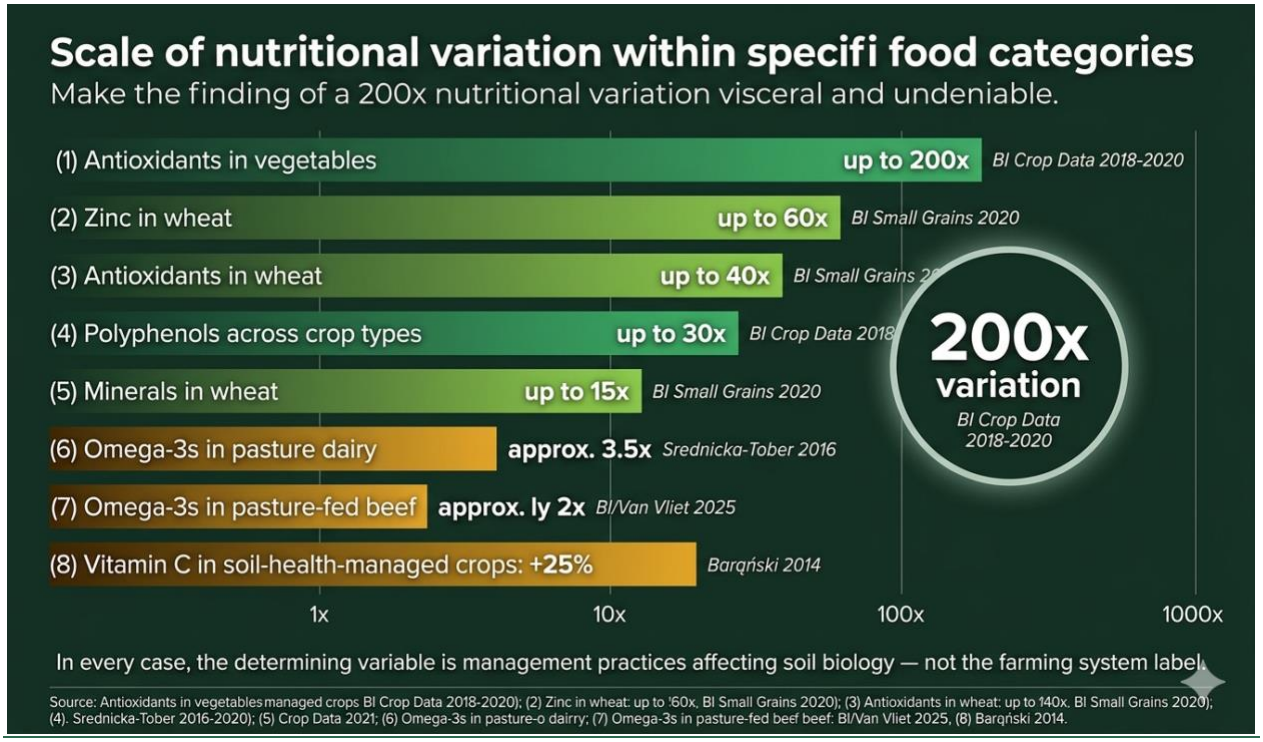
Major Review Concludes That Soil Biology Is the Key Determinant of Nutritional Density in Food — And Why How We Measure Nutrition Needs To Change.

Vitagri — born from the Nuffield Farming Scholarships Trust — publishes the most rigorous independent review of farming and human nutrition ever produced in the UK, announces a first-of-its-kind predictive modelling programme, and launches a landmark research partnership with the world's leading nutrient density science organisation

An independent team of UK farmers, scientists, and healthcare professionals today releases ***Growing Health – From Soil to Human Health***, a landmark white paper that synthesises more than 3,000 peer-reviewed studies on the links between agricultural practices and human nutrition. The report concludes with significant implications for farming, food, and public health policy: **soil health — and especially the soil's biological activity — is the essential factor shaping the nutritional density of the food we eat.** Furthermore, how we evaluate the UK's food nutrition needs to evolve.

Vitagri's origins trace back to the **Nuffield Farming Scholarships Trust** — the programme that has, since 1947, supported hundreds of British farmers and industry professionals. It was within this community that the need for a comprehensive, independent assessment of farming's connection to human health first became evident. Today, Vitagri has grown well beyond the Nuffield network to include scientists, nutritionists, and healthcare professionals, while the Nuffield Farming community remains central to its international influence. The white paper was made possible by an

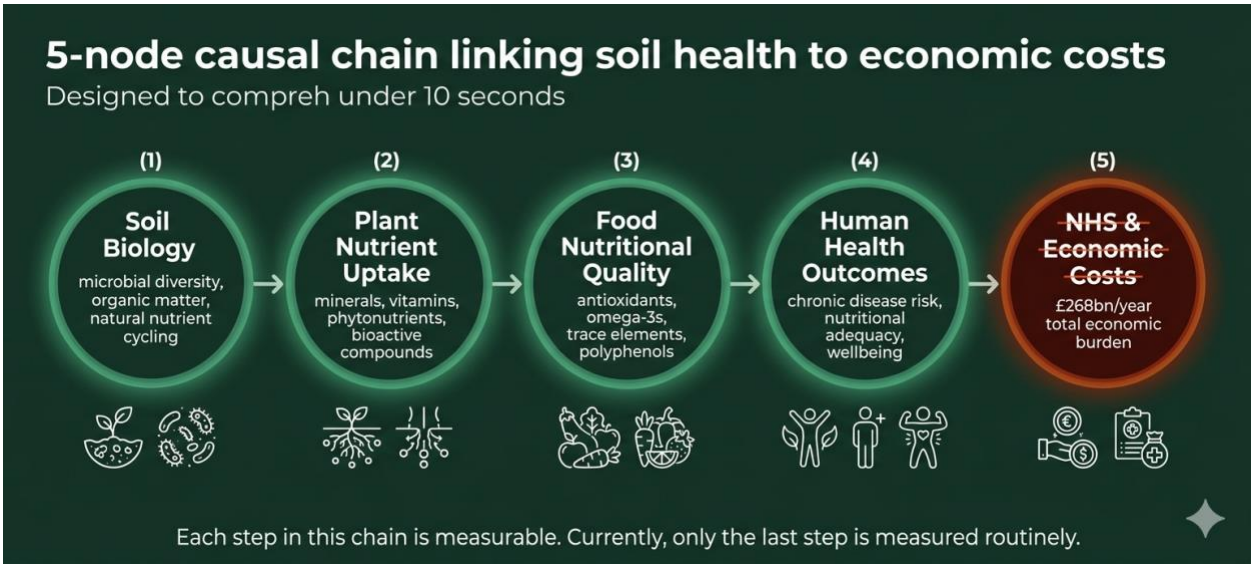
award from the **Frank Parkinson Agricultural Trust** — one of the UK's most respected agricultural charitable organisations — whose support funded the systematic review of the evidence base.



The Central Finding: Soil Biology Connects Farming to Human Health

Growing Health's main conclusion is not that one type of farming system is better than another. It is that the biological health of the soil — including the diversity and vitality of its microbial communities, its organic matter content, and its ability to support nutrient cycling — is the mechanism linking farming practices to the nutritional density of the food produced. This finding is supported by independent peer-reviewed research and nearly a decade of field data collected by the Bionutrient Institute across 20 crops and almost 4,000 samples in the United States and Europe.

The practical implication is significant and deliberately challenges traditional labels: it is not organic certification, regenerative accreditation, or any other farming-system designation that determines nutritional outcomes. Instead, it is specific management practices — those that support soil biological activity, minimise disruption to microbial communities, build organic matter, and promote natural nutrient cycling — that influence the nutritional quality of what is cultivated. A well-managed conventional farm can produce more nutritious food than a poorly managed certified-organic farm. The soil does not read labels; it responds to management.



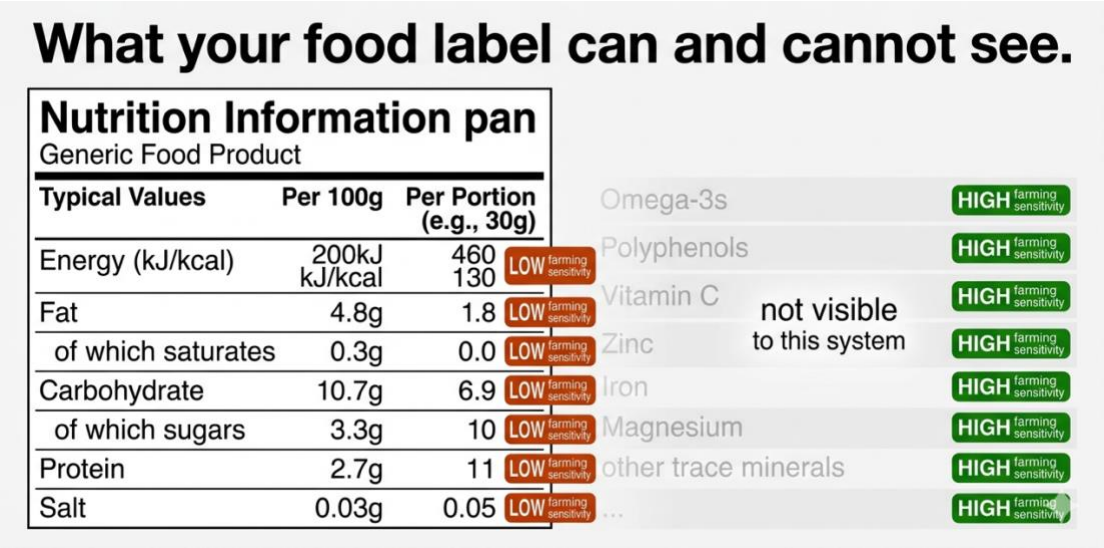
The **Growing Health** white paper uses a PRISMA-informed systematic review approach, a four-tier evidence grading system, and intentionally considers published counterevidence — including Dangour (2009) and Smith-Spangler (2012) — rather than disregarding it. Key findings include:

- Studies comparing farming systems with different soil health management approaches consistently show nutritional differences in the food produced. For meat and dairy, high-level evidence links pasture quality and diversity — indicators of the grassland ecosystem's biological health — to significantly better fatty acid profiles, including omega-3 content approximately double that of intensively managed equivalents in the strongest meta-analyses.
- For vegetables and arable crops, higher levels of antioxidant compounds, vitamin C, and key minerals are linked to management practices that promote soil biology, with variation between individual farms often surpassing the typical differences among broad farming categories.
- 96% of the UK population does not meet the recommended fibre intake; significant deficiencies in vitamin D, iron, folate, and B12 are recorded in the 2019–2023 National Diet and Nutrition Survey — reflecting a food system where the nutritional impacts of degraded soil health remain structurally invisible to measurement and policy.
- Diet-related ill health costs the NHS an estimated £7–10 billion annually in direct expenses. The overall economic burden, including social care and productivity losses, amounts to approximately £268 billion each year — nearing the total annual NHS budget.
- The Bionutrient Institute's data across US supply chains reveals nutrient variation within single food categories that far exceeds average differences between farming systems: antioxidant levels varying up to 200:1 in vegetables and zinc content differing more than 60-fold in wheat. In both cases, the key factor is not the certification label but the management practices that influence soil biology.

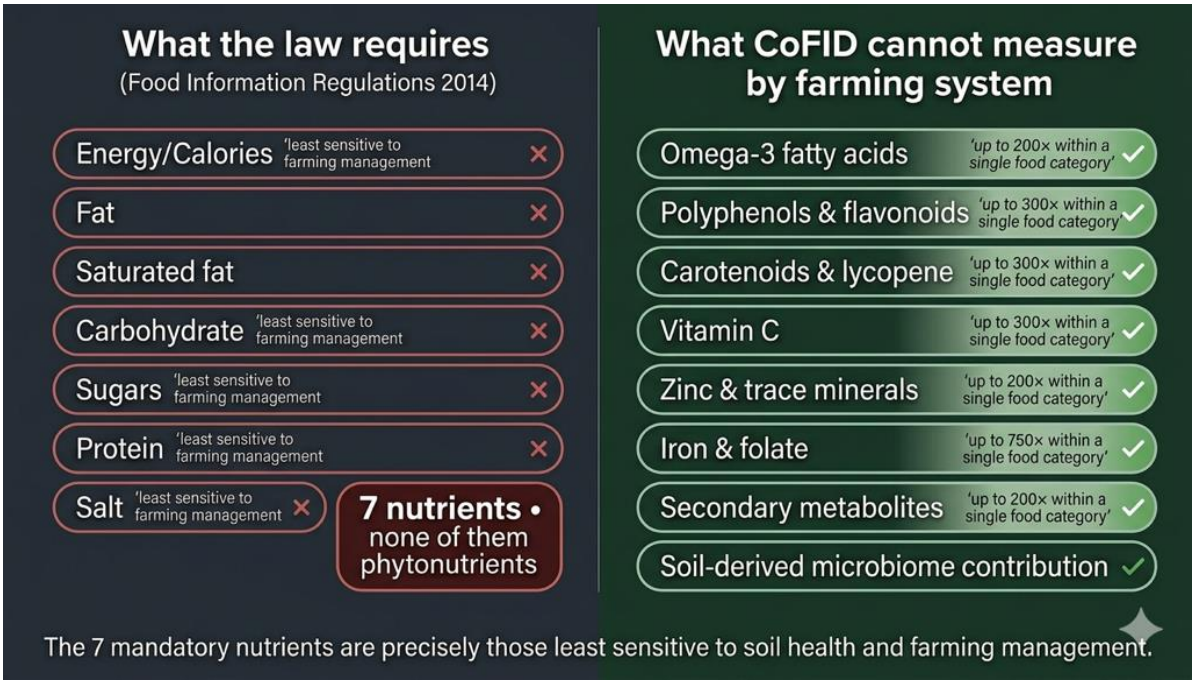
Growing Health is also clear about what the evidence has yet to establish. The complete mechanistic link from specific soil management methods to particular human health outcomes remains to be fully clarified. Vitagri's approach is purposeful: 'confident enough to act, not confident enough to

overclaim.' The white paper addresses all major food groups — meat, dairy, vegetables, cereals, fruit, and more — with evidence graded honestly across the entire spectrum of confidence levels.

The Measurement System Failure



One of Growing Health's most urgent structural concerns relates to the UK's food measurement infrastructure. The Food Information Regulations 2014 mandate that food labels list seven macronutrients: calories, fat, saturated fat, carbohydrates, sugars, protein, and salt. These are exactly the nutrients least influenced by variations in soil health and farming practices, yet the white paper highlights how vital a broader spectrum of nutrients is to human health. The



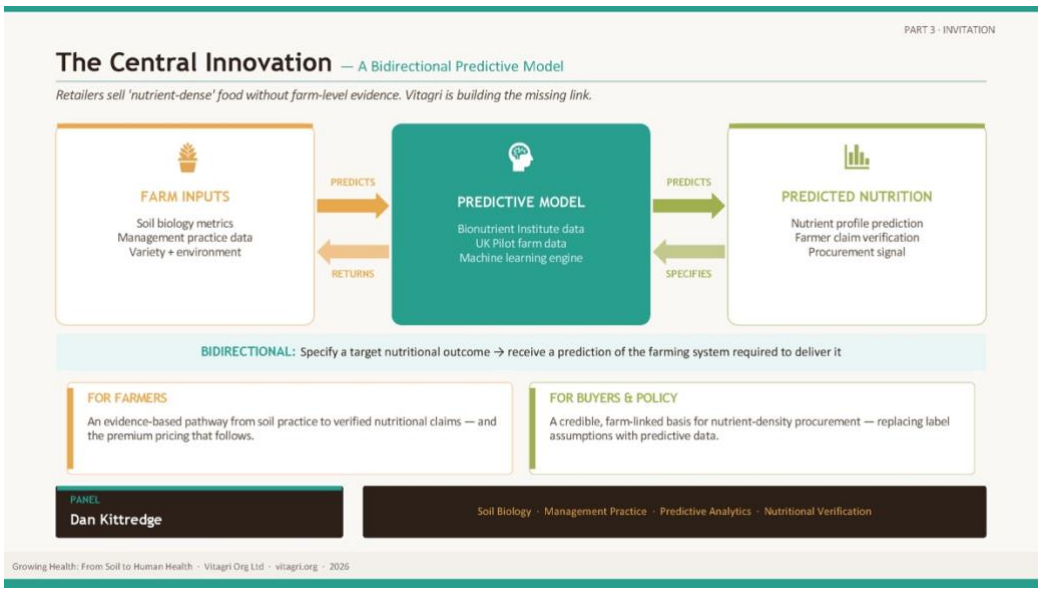
Composition of Foods Integrated Dataset (CoFID) — the UK's national food composition reference — offers a single average nutrient profile for each food, regardless of how or where it was produced, and it does not include phytonutrients, minerals, trace elements, or bioactive compounds at all.

The consequence is a food system blind to the most nutritionally important variables in its supply chain. Farmers who manage soil health carefully and produce more nutritious food lack a mechanism to demonstrate, verify, or price that quality. Food businesses make procurement decisions without measuring the nutritional density of the production system. Policymakers design public health interventions without visibility of the agricultural variables that drive population-level nutritional shortfalls.

> *We have a measurement infrastructure designed before we understood what farming — particularly soil health — contributes to nutrition. The seven nutrients on the back of a packet are exactly the ones least affected by how food is grown. However, we now know that a broader range of nutrients is vital for human health, and these additional nutrients are often influenced by the way they are produced on the farm. We urgently need a measurement that can reveal what the evidence now indicates is present.*
>
> **— Rob Ward, CEO, Vitagri Org Ltd**

A Scientific Innovation: The Nutritional Outcomes Predictive Model

Growing Health's most significant forward-looking conclusion is the identification of a specific and feasible scientific innovation that could revolutionise the relationship between farming practices and nutritional density throughout the entire food system: a predictive modelling algorithm capable of forecasting the nutritional results of a farming system — and, importantly, of running the model backwards to identify the farming system most likely to produce a desired nutritional outcome.



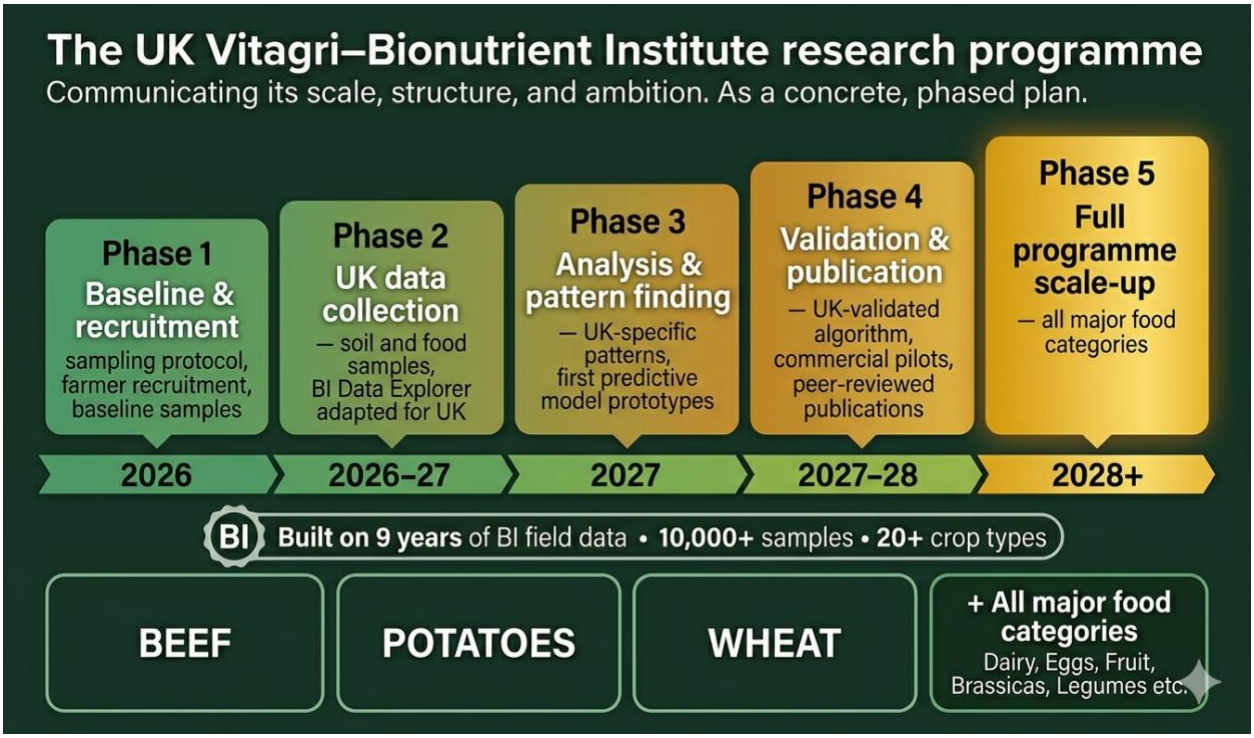
This bidirectional capability represents a significant advancement beyond any current measurement tool. On the forward side, a farmer or food business can input their management practices, soil

metrics, and environmental conditions to obtain a validated prediction of the likely nutritional profile of their crop or livestock product. On the reverse side, a nutritionist, food buyer, or public health body can specify a target nutritional outcome — such as a level of omega-3, antioxidant content, or mineral density — and receive a prediction of the farming system parameters most likely to achieve it.

This is not just a theoretical goal. The technical groundwork already exists. The Bionutrient Institute has dedicated nine years to developing the dataset, spectral measurement tools, and machine learning models that make such a system feasible. The only missing element is UK-specific data: supply chain samples, management metadata, and soil metrics from British farms needed to calibrate and validate models for UK conditions, soil types, climate, and crop varieties.

The Partnership to Build It: Vitagri and the Bionutrient Institute

Alongside the white paper, Vitagri announces a landmark research partnership with the **Bionutrient Institute** — the US-based scientific organisation founded in 2016 that has compiled the world's most comprehensive empirical dataset linking farming practices, soil health, and crop nutrient density. The Bionutrient Institute has analysed nearly 4,000 food and soil samples from over 20 crops across three independent laboratories, produced peer-reviewed publications—including landmark research on beef nutrient density published in the *Journal of Animal Science* in December 2025— and developed the Bionutrient Meter— a handheld spectrometer that uses machine learning to estimate nutrient density at the field scale.



The UK programme starts with three key commodity categories representing the main sectors of British agriculture: beef, potatoes, and wheat. However, this is just an initial programme, not a final

boundary. Vitagri's goal is to cover all major food categories — from dairy and eggs to brassicas, legumes, and root vegetables — creating a comprehensive understanding of how soil health relates to nutritional density across the entire British food supply.

The Bionutrient Institute's recommended methodology, validated over nearly a decade of US research, emphasises broad supply chain sampling across the widest range of management approaches to establish the natural range of nutritional variation within UK supply chains. No farming system is excluded; no management approach is presumed superior. The data leads.

The goal is to develop UK-validated predictive models for key food categories by 2027. — this will be the first time such infrastructure exists for British agriculture, providing the technical foundation for the bidirectional algorithm that Growing Health sees as the essential innovation the food system requires.

> *Vitagri has established what the evidence demonstrates: soil biology is essential. Our partnership with the Bionutrient Institute focuses on developing a measurement system that enables the food sector to act on this knowledge — beginning with UK beef, wheat, and potatoes, then expanding to all major food categories, and aiming for validated predictive models by 2027.*
>
> **— Rob Ward, CEO, Vitagri Org Ltd**

Why This Matters Now

Growing health concerns emerge as political, commercial, and public pressures on the food system converge from multiple directions. The Good Food Bill is currently before Parliament. DEFRA's agricultural policy is actively evolving. The NHS faces significant financial strain amid diet-related chronic diseases. Groundswell 2025 attracted over 10,000 attendees — including the first ministerial and Royalty appearances at the event — reflecting a farming community already shifting towards soil-health-focused management. Retailers, such as M&S, showed interest in high-nutrition products, launching a Nutrient Dense range of food in January 2026.

Despite this surge of industry and consumer enthusiasm for improving soil biology and nutrient density, there remains no system of meaningful measurement infrastructure to verify or reward the nutritional outcomes.

Vitagri's argument is not that farming has failed. It is that the feedback loop between farming and human health has been broken, along with a measurement infrastructure that cannot perceive the full picture of nutrition in the food it is meant to characterise. Soil biology is the missing link. Predictive modelling is the tool to reconnect the system. And the evidence base to justify building it — three thousand peer-reviewed studies, nine years of Bionutrient Institute field data, and the clearest meta-analytic picture yet assembled — now exists.

About Vitagri Org Ltd

Vitagri is an independent organisation with roots in the Nuffield Farming Scholarships Trust. Established by Nuffield scholars dedicated to bridging the gap between agricultural practice and human nutrition, it has expanded to include UK farmers, scientists, nutritionists, and healthcare professionals united by a common goal: to pursue the evidence, not ideology. Supported by an award from the Frank Parkinson Agricultural Trust and in research partnership with the Bionutrient Institute, Vitagri's mission is to make the nutritional quality influenced by soil health and farming systems visible, verifiable, and investable — across all major food categories.

White paper download:

www.vitagri.org

Vitagri Pulse AI For Personalised Nutritional Plan:

chatgpt.com/g/g-693301d5e3cc8191a57a128dc50f27ec-vitagri-pulse

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