

# Single-Cell Protein Market to Reach US\$ 21.4 Bn by 2033 Driven by Sustainable Nutrition

*The global single-cell protein market is set to grow from US\$12.1Bn in 2026 to US\$21.4Bn by 2033, expanding at a steady CAGR of 8.4% driven by demands*

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/EINPresswire.com/ -- The global [single-cell protein market](#) is witnessing remarkable growth as governments, food manufacturers, and feed producers increasingly seek sustainable protein alternatives to

address rising global food demand and environmental concerns. Single-cell protein (SCP), derived from microorganisms such as algae, bacteria, fungi, and yeast, has emerged as an efficient, environmentally friendly, and nutritionally rich protein source for food, animal feed, aquaculture, and industrial applications. According to recent market analysis, the global single-cell protein market is estimated to grow from US\$ 12.1 billion in 2026 to US\$ 21.4 billion by 2033, registering a compound annual growth rate (CAGR) of 8.4% during the forecast period from 2026 to 2033. Growing concerns over food security, increasing global population, rising demand for alternative proteins, and the shift toward sustainable agricultural practices continue to drive market expansion.

Technological advancements in microbial fermentation, precision fermentation, biotechnology, and industrial-scale cultivation processes are significantly improving production efficiency and product quality. Increasing investments in circular bioeconomy initiatives, government support for sustainable food systems, and growing consumer acceptance of novel protein ingredients are further strengthening market growth. Additionally, rising demand for protein-rich functional foods, animal nutrition products, and environmentally responsible food production methods is expected to create substantial opportunities for manufacturers throughout the forecast period.

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SINGLE CELL PROTEIN (SCP)

The graphic features a close-up of green, spherical microorganisms (likely algae or yeast) next to several pinkish-brown mushrooms, set against a dark background with a subtle geometric pattern.

## Segmentation Analysis

### By Nature

- Yeast
- Fungi
- Algae
- Bacteria

### By Application

- Food & Beverage
- Fortified Food
- Fortified Beverage
- Animal Feed
- Poultry Food
- Fish Feed
- Livestock Feed
- Dietary Supplements
- Others

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## Regional Insights

North America continues to lead the global single-cell protein market, supported by advanced biotechnology infrastructure, significant research and development investments, growing alternative protein industries, and increasing consumer awareness regarding sustainable nutrition. The United States remains a major contributor, driven by expanding investments in food technology startups, precision fermentation companies, and sustainable agriculture initiatives. Strong collaboration between biotechnology firms, academic institutions, and food manufacturers continues to accelerate commercialization of innovative microbial protein products.

Europe represents another major market owing to its strong regulatory support for sustainable food systems, ambitious climate goals, and increasing demand for environmentally responsible protein sources. Countries including Germany, the Netherlands, France, Denmark, and the United Kingdom are witnessing significant investments in microbial protein production facilities and alternative protein research. Growing adoption of plant-based diets and circular economy initiatives further contributes to regional market growth.

Asia-Pacific is expected to emerge as the fastest-growing regional market during the forecast period. Rapid population growth, increasing protein consumption, rising food security concerns, expanding livestock production, and growing investments in biotechnology are driving demand

for single-cell protein across China, India, Japan, South Korea, Singapore, and Southeast Asia. Government initiatives promoting food innovation and sustainable agriculture continue to encourage large-scale production and commercialization of microbial protein solutions.

Latin America is gradually expanding its market presence due to increasing investments in sustainable agriculture and growing demand for high-quality animal feed. Meanwhile, the Middle East and Africa present promising opportunities as governments focus on improving food security, reducing import dependence, and adopting innovative agricultural technologies suitable for resource-constrained environments.

### Unique Features and Innovations in the Market

Innovation continues to transform the single-cell protein industry through rapid advancements in biotechnology, artificial intelligence, and digital manufacturing systems. Artificial intelligence is increasingly utilized to optimize microbial strain selection, fermentation conditions, production scheduling, and quality control processes. AI-driven predictive analytics enables manufacturers to improve production yields, reduce resource consumption, and accelerate product development while minimizing operational costs.

The integration of Internet of Things (IoT) technologies into fermentation facilities has significantly enhanced process monitoring, equipment performance, environmental control, and production traceability. Connected sensors continuously monitor temperature, pH levels, nutrient availability, oxygen concentration, and microbial growth, ensuring optimal production efficiency and consistent product quality.

### Market Highlights

The global single-cell protein market continues to gain widespread attention due to its ability to address multiple global challenges, including food security, climate change, sustainable agriculture, and resource conservation. Growing demand for environmentally friendly protein production methods is encouraging food manufacturers, feed producers, and biotechnology companies to increase investments in microbial protein technologies.

Governments across numerous countries are supporting research initiatives, biotechnology innovation, and sustainable food production through favorable regulatory policies and funding programs. These initiatives are accelerating commercialization while improving public acceptance of alternative protein products.

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### Key Players and Competitive Landscape

- Alltech, Inc.
- Angel Yeast Co., Ltd
- Novus International
- BEC Feed Solutions Pty Ltd.
- Calysta, Inc
- Evonik Industries AG
- Lallemand Inc.
- BioProcess Algae, LLC
- Unibio A/S
- Devenish Nutrition Limited
- BIOMIN Holding GmbH
- Nutreco N.V.
- Prosol S.P.A
- DIC Corporation
- Parry Nutraceuticals
- Chr. Hansen A/S
- GNC Holdings, Inc.
- Church & Dwight Co., Inc.
- Willows Ingredients Ltd.

## Future Opportunities and Growth Prospects

The future outlook for the global single-cell protein market remains highly promising as the global demand for sustainable protein sources continues to rise. Increasing population growth, changing dietary preferences, environmental concerns, and pressure on conventional agricultural systems are expected to accelerate investments in microbial protein production over the coming years.

Artificial intelligence will play an increasingly important role in optimizing microbial engineering, fermentation efficiency, predictive maintenance, production planning, and supply chain management. Machine learning technologies will enable manufacturers to accelerate strain development, improve nutrient utilization, and reduce manufacturing costs through continuous process optimization.

The continued adoption of IoT-enabled manufacturing systems will improve production transparency, quality assurance, resource management, and operational efficiency across industrial fermentation facilities. Advances in precision fermentation, metabolic engineering, and synthetic biology are expected to unlock entirely new categories of customized protein ingredients tailored to specific nutritional, functional, and industrial requirements.

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