

On-Farm Nutrient Recycling Market Forecasts to 2034 – Global Analysis By Nutrient Source (Crop Residues, Livestock Manure, Food Processing Residues, Organic Waste, Biogas Digestate and Other Nutrient Sources), Technology, Product, Farm Type, Nutrient, and Geography

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Abstracts

According to Statistics MRC, the Global On-Farm Nutrient Recycling Market is accounted for \$0.8 billion in 2026 and is expected to reach \$2.2 billion by 2034 growing at a CAGR of 13.5% during the forecast period. On-Farm Nutrient Recycling comprises technologies and agricultural practices that recover, process, and reuse nutrients from farm-generated residues, manure, crop biomass, wastewater, and other organic materials. These systems can recover nutrients such as nitrogen, phosphorus, potassium, and organic matter for use as fertilizers or soil amendments. Applications include manure processing, composting, anaerobic digestion, nutrient recovery systems, crop-residue management, and organic fertilizer production. Farmers use nutrient recycling to reduce dependence on externally purchased inputs, improve resource efficiency, and manage agricultural waste. Digital monitoring and precision application technologies can further optimize nutrient recovery and field utilization. Growing fertilizer costs, sustainability objectives, and concerns about nutrient losses are supporting adoption. Integration with circular agriculture practices is expanding opportunities for closed-loop nutrient management on farms.

Market Dynamics

Driver:

Growing demand for sustainable nutrient management

On-Farm Nutrient Recycling Market Forecasts to 2034 – Global Analysis By Nutrient Source (Crop Residues, Lives...

Increasing regulatory pressure and rising fertilizer costs are driving farmers to adopt on-farm nutrient recycling technologies that convert waste streams into valuable fertilizers. Growing awareness of the environmental impact of synthetic fertilizers supports market expansion. Rising nutrient prices make recovered nutrients increasingly cost-competitive with conventional fertilizers. Growing emphasis on circular economy principles in agriculture drives adoption of recycling technologies. Regulatory requirements for manure management and water quality protection accelerate investment in nutrient recovery.

Restraint:

High capital costs and technical complexity

High capital costs for on-farm nutrient recycling systems present significant barriers, particularly for small and mid-sized farms with limited capital budgets. Technical complexity of operating and maintaining recycling systems demands specialized expertise. Variability in waste stream composition affects process reliability and output quality. Limited infrastructure for distributing recovered nutrients may constrain market growth. Uncertainty regarding return on investment may delay adoption decisions.

Opportunity:

Innovation in nutrient recovery technologies

Innovation in nutrient recovery technologies presents significant growth opportunities for on-farm recycling solutions. Advances in membrane separation, struvite precipitation, and ammonia stripping improve nutrient recovery efficiency. Growing availability of modular, containerized systems reduces installation costs and enables deployment on smaller farms. Integration with biogas production creates additional revenue streams. Development of precision application technologies enables optimal use of recovered nutrients.

Threat:

Competition from conventional fertilizers

Competition from conventional synthetic fertilizers may limit adoption of recovered nutrients in applications where price and convenience are primary considerations. Economic pressures may cause farmers to delay investments in recycling technologies. Regulatory changes affecting waste management may impact market development. Consumer skepticism regarding recovered nutrient quality may affect adoption. Rapid

growth of nutrient recycling attracts new entrants and intensifies competition.

Covid-19 Impact:

The COVID-19 pandemic highlighted vulnerabilities in fertilizer supply chains, accelerating interest in on-farm nutrient recycling as a means of improving self-sufficiency. Rising fertilizer prices following the pandemic reinforced the economic case for nutrient recovery. The post-pandemic period has witnessed increased investment in recycling technologies as farmers prioritize resilience and cost reduction. Growing focus on sustainable agriculture continues driving adoption. Regulatory support for circular economy approaches supports market growth.

The livestock manure segment is expected to be the largest during the forecast period

The livestock manure segment is expected to account for the largest market share during the forecast period as manure represents the most abundant and nutrient-rich waste stream on farms. Growing regulatory requirements for manure management drive adoption of recycling technologies. Advances in anaerobic digestion and nutrient recovery enable efficient conversion of manure into valuable fertilizers. Established infrastructure and application knowledge support segment leadership. Livestock manure is the primary feedstock for on-farm nutrient recycling.

The anaerobic digestion segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the anaerobic digestion segment is predicted to witness the highest growth rate driven by increasing adoption of anaerobic digestion for both waste treatment and biogas production. Anaerobic digestion produces digestate rich in nutrients while generating renewable energy. Growing availability of incentives for renewable energy production supports adoption. Advances in digester technology improve efficiency and reduce costs. Integration with nutrient recovery systems enables comprehensive waste valorization.

Region with largest share:

During the forecast period, the Europe region is expected to hold the largest market share owing to stringent environmental regulations, high fertilizer costs, and strong support for circular economy approaches in agriculture. European Union policies

promoting sustainable nutrient management drive adoption of recycling technologies. High population density and livestock concentration create significant manure management challenges that require advanced solutions. Strong regulatory framework and incentives support market growth across the region.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by large agricultural sector, growing livestock production, and increasing awareness of sustainable nutrient management. China, India, and Southeast Asian countries are expanding on-farm nutrient recycling as fertilizer costs rise and environmental concerns grow. Government support for sustainable agriculture accelerates market growth. Rapid livestock sector development creates substantial new demand.

Key players in the market

Some of the key players in the On-Farm Nutrient Recycling Market include Veolia Environnement S.A., Novonesis A/S, ABEC, Inc., BioBag International AS, Re-Nuble, Inc., Black Soldier Fly Solutions, Grain Ecosystem, Anaergia Inc., HomeBiogas Ltd., Hitachi Zosen Corporation, PlanET Biogas Global GmbH, SEAB Energy Ltd., Kanadevia Corporation, Waste Management, Inc., and ADM.

Key Developments:

In August 2026, Anaergia Inc. launched an integrated on-farm nutrient recycling system combining anaerobic digestion with advanced nutrient recovery for comprehensive manure valorization.

In April 2026, Veolia Environnement S.A. introduced a modular nutrient recovery system for livestock farms, enabling efficient conversion of manure into high-value fertilizers.

In December 2025, HomeBiogas Ltd. expanded its on-farm biogas and nutrient recycling portfolio with new systems designed for small and mid-sized farms.

Nutrient Sources Covered:

Crop Residues

Livestock Manure

Food Processing Residues

Organic Waste

Biogas Digestate

Other Nutrient Sources

Technologies Covered:

Composting

Anaerobic Digestion

Nutrient Recovery

Biological Processing

Thermal Processing

Other Technologies

Products Covered:

Organic Fertilizers

Compost

Digestate

Nitrogen Products

Phosphorus Products

Other Products

Farm Types Covered:

Crop Farms

Livestock Farms

Mixed Farms

Dairy Farms

Horticultural Farms

Other Farm Types

Nutrients Covered:

Nitrogen

Phosphorus

Potassium

Carbon

Micronutrients

Other Nutrients

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa
South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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