

# **Water-Efficient Food Production Market Forecasts to 2034 – Global Analysis By Production Environment (Open Field Farming, Greenhouse Farming, Vertical Farming, and Urban and Rooftop Farming), Crop Type, End User, and By Geography**

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## **Abstracts**

According to Statistics MRC, the Global Water-Efficient Food Production Market is accounted for \$5.7 billion in 2026 and is expected to reach \$14.7 billion by 2034 growing at a CAGR of 12.6% during the forecast period. Water-efficient food production encompasses agricultural methods and technologies designed to maximize crop yield while minimizing water consumption, including drip irrigation, precision watering systems, and controlled environment agriculture. This market addresses the critical challenge of feeding a growing global population amid increasing water scarcity, climate variability, and competition for freshwater resources from urban and industrial sectors. The integration of smart sensors, automated irrigation scheduling, and water recycling technologies is transforming traditional farming practices across diverse production environments.

Market Dynamics:

Driver:

Escalating global water scarcity and groundwater depletion

Rapidly depleting aquifers, shrinking reservoirs, and prolonged drought conditions across major agricultural regions are compelling farmers and agribusinesses to adopt water-efficient production methods. The agricultural sector currently accounts for approximately seventy percent of global freshwater withdrawals, making it the primary target for conservation efforts. As water tables drop and irrigation costs rise, traditional flood irrigation becomes economically and environmentally unsustainable. Governments are implementing stricter water allocation policies and withdrawing subsidies for inefficient practices, forcing a fundamental shift toward precision irrigation, soil moisture

monitoring, and water-recycling systems that enable sustainable crop production despite diminishing water availability.

**Restraint:**

High initial investment costs for efficient systems

The substantial capital required for installing drip irrigation networks, soil sensors, automated controllers, and water recycling infrastructure remains a significant barrier, particularly for smallholder farmers in developing regions. A complete conversion from conventional to water-efficient systems can cost thousands of dollars per hectare, representing an insurmountable financial hurdle for operators already struggling with narrow profit margins. Limited access to agricultural credit and financing mechanisms further constrains adoption rates. While long-term water savings and yield improvements justify the investment over time, the upfront expenditure creates a significant adoption gap between well-capitalized commercial farms and resource-limited smallholders who collectively manage substantial portions of global agricultural land.

**Opportunity:**

Integration of IoT and AI for precision water management

Connected sensors, satellite imagery, and machine learning algorithms are revolutionizing irrigation decision-making by enabling real-time, site-specific water application. Soil moisture probes, weather stations, and plant stress sensors transmit continuous data to cloud-based platforms that generate precise watering recommendations or fully automate irrigation systems. AI models predict crop water requirements based on growth stages, microclimate conditions, and soil characteristics, reducing waste while optimizing yields. This technological convergence allows farmers of all scales to implement sophisticated water management previously available only to large operations, dramatically expanding the addressable market for efficiency solutions across diverse agricultural settings worldwide.

**Threat:**

Climate change-induced weather unpredictability

Increasing frequency of extreme weather events, including sudden intense rainfall followed by prolonged dry spells, complicates the reliable implementation of water-efficient production schedules. Unpredictable precipitation patterns make it difficult for farmers to plan irrigation cycles, potentially negating the benefits of efficiency investments when unexpected floods or droughts occur. Shifting growing seasons and temperature fluctuations alter crop water requirements in ways that exceed the design parameters of existing systems. Climate uncertainty also discourages long-term infrastructure investments, as farmers hesitate to commit capital to systems optimized for historical conditions that may no longer apply, potentially slowing market growth.

**Covid-19 Impact:**

The COVID-19 pandemic exposed vulnerabilities in global food supply chains while simultaneously accelerating interest in local, resource-efficient food production methods. Lockdowns and border closures disrupted international agricultural trade, prompting renewed focus on domestic food security and regional self-sufficiency. Labor shortages during harvest seasons highlighted the value of automated, controlled environment agriculture that reduces dependency on manual workers. Government stimulus packages in several countries included funding for agricultural technology adoption and water infrastructure improvements. These pandemic-driven shifts in policy priorities and consumer preferences have created sustained momentum for water-efficient production systems across greenhouse, vertical, and urban farming applications.

The Greenhouse Farming segment is expected to be the largest during the forecast period

The Greenhouse Farming segment is expected to account for the largest market share during the forecast period, driven by the proven balance between water efficiency gains and production scalability. Greenhouses achieve significant water savings through recirculating irrigation systems, captured condensation, and controlled transpiration rates, typically using eighty to ninety percent less water than open field equivalents while enabling year-round production. The protected environment shields crops from weather extremes and pests, further improving resource use efficiency. Established commercial greenhouse operations in Europe, North America, and increasingly China provide a substantial installed base. The segment's maturity, combined with continuous technological improvements in climate control and hydroponic systems, ensures its continued market leadership.

The Herbs and Microgreens segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the Herbs and Microgreens segment is predicted to witness the highest growth rate, fueled by surging consumer demand for fresh, nutritious, and locally grown specialty produce. These crops offer exceptional water-to-value economics, achieving rapid growth cycles with minimal water inputs in vertical and greenhouse systems. High density cultivation enables substantial revenue generation per unit of water consumed, making them ideal candidates for urban farms and controlled environment facilities. Chefs, health-conscious consumers, and grocery chains increasingly seek consistently available, pesticide-free herbs and microgreens that water-efficient production reliably delivers. The segment's premium pricing and high turnover create compelling economics accelerating investment and expansion worldwide.

Region with largest share:

During the forecast period, the Asia-Pacific region is expected to hold the largest market

share, driven by its extensive agricultural production base, rapidly growing population, and increasing pressure on water resources across major farming economies such as China and India. Governments throughout the region are actively promoting precision irrigation, smart farming, hydroponics, and sustainable agriculture practices to improve food security while reducing water consumption. Rising investments in greenhouse cultivation, vertical farming, and IoT-enabled irrigation systems are further accelerating market expansion. In addition, the presence of large-scale agricultural activities, expanding agri-tech adoption, and supportive policy initiatives aimed at improving water-use efficiency continue to strengthen Asia-Pacific's leadership in the water-efficient food production market throughout the forecast period.

**Region with highest CAGR:**

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR, supported by accelerating urbanization, increasing freshwater scarcity, and strong investments in advanced agricultural technologies. Countries such as China, India, Japan, Singapore, South Korea, and Australia are rapidly adopting water-efficient cultivation methods including drip irrigation, aeroponics, hydroponics, and controlled-environment agriculture to address food security and climate-related agricultural challenges. Government-backed smart agriculture programs, rising awareness regarding sustainable farming practices, and expanding adoption of AI- and sensor-based irrigation systems are creating strong growth opportunities across the region. Furthermore, increasing private sector participation and technological innovation in agri-tech are expected to drive exceptional market growth in Asia-Pacific over the coming years.

**Key players in the market**

Some of the key players in Water-Efficient Food Production Market include Netafim Ltd, Jain Irrigation Systems Limited, The Toro Company, Valmont Industries Inc., Lindsay Corporation, Rain Bird Corporation, Hunter Industries Incorporated, Trimble Inc., Deere & Company, AGCO Corporation, BASF SE, Syngenta Group, Bayer AG, Corteva Inc., Nutrien Ltd, and Yara International ASA.

**Key Developments:**

In January 2026, Netafim Ltd launched a new suite of precision irrigation systems that combine subsurface drip irrigation (SDI) with AI-driven analytics, reportedly reducing water consumption by up to 30% in large-scale agricultural operations.

In January 2025, Trimble Inc. launched the PTx Trimble OutRun autonomous grain solution in partnership with AGCO, which optimizes harvesting efficiency and reduces the time crops are exposed to environmental stress, indirectly supporting better resource management.

In December 2025, The Toro Company launched the HammerHead PortaBurst PB30X, a first-of-its-kind machine designed to replace aging water lines without significant

surface disruption, reducing water loss from infrastructure leaks.

Production Environments Covered:

Open Field Farming

Greenhouse Farming

Vertical Farming

Urban and Rooftop Farming

Crop Types Covered:

Fruits and Vegetables

Cereals and Grains

Oilseeds and Pulses

Herbs and Microgreens

High-Value and Specialty Crops

End Users Covered:

Large Agricultural Enterprises

Small and Medium Farmers

Agribusiness Companies

Institutional and Government Bodies

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

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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)

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