

North America Mycorrhizae Based Biofertilizers Market, By Type (Endomycorrhizae, Ectomycorrhizae), By Form (Liquid, Solid), By Mode of Application (Soil Treatment, Seed Treatment, and Fertilization Treatment), By Application (Agriculture, Non-Agriculture), By Country and Competition, Forecast & Opportunities, 2018-2028F

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Abstracts

The North America Mycorrhizae Based Biofertilizers Market was valued at USD 155.93 Million in 2022 and is anticipated to project robust growth in the forecast period with a CAGR of 7.15% and is expected to reach USD 233.20 Million by 2028. Mycorrhiza represents a symbiotic interaction occurring between specific fungi and the roots of plants, wherein the fungi establish a mutually beneficial relationship with the plants. Mycorrhizae-based biofertilizers are specialized organic formulations that incorporate advantageous mycorrhizal fungi alongside other essential nutrients and growth-promoting microorganisms. These biofertilizers are meticulously crafted to augment plant growth, optimize nutrient absorption, and enhance overall plant vitality by facilitating a mutually advantageous interaction between the mycorrhizal fungi and the plant roots. Furthermore, mycorrhizae-based biofertilizers also offer protective benefits to plants by shielding them from numerous soil-borne infections, mitigating the stress associated with transplantation, and alleviating the impact of acidic conditions. All these factors contribute to the growth of the North America Mycorrhizae Based Biofertilizers Market in the forecast period.

Key Market Drivers

Growing Utilization of Mycorrhizae Based Biofertilizers in Organic Farming

Organic farming has gained widespread recognition and popularity in recent years as consumers become more conscious of the food they consume and its impact on health and the environment. As a result, there is an increasing demand for organic produce, and with it, the need for sustainable and eco-friendly farming practices. In this context, mycorrhizae-based biofertilizers have emerged as a vital tool in the arsenal of organic farmers. These biofertilizers, which harness the power of beneficial fungi to enhance nutrient uptake and soil health, are witnessing a surge in demand within the organic farming sector. Organic farming represents a paradigm shift in agriculture, emphasizing sustainable and environmentally friendly practices. Unlike conventional farming, which relies heavily on synthetic chemicals, organic farming strives to minimize the use of synthetic pesticides and fertilizers while promoting soil health, biodiversity, and long-term sustainability. As consumers increasingly seek out organic produce due to health and environmental concerns, farmers are under pressure to adopt organic farming methods. Moreover, in organic farming, synthetic fertilizers are not allowed, and farmers must rely on natural and organic alternatives to provide essential nutrients to crops. This reliance on natural fertilizers, including compost, manure, and biofertilizers, makes the choice of fertilization methods critical to the success of organic farming. Mycorrhizae-based biofertilizers have gained prominence as an essential component of organic farming practices.

Furthermore, Soil health is a critical factor in organic farming, and mycorrhizae-based biofertilizers play a vital role in improving and maintaining soil health. As farmers recognize the importance of nurturing their soil for long-term sustainability, the demand for biofertilizers that enhance soil structure and nutrient cycling is on the rise. Healthy soil not only supports robust plant growth but also sequesters carbon, mitigating climate change. Additionally, it reduces the risk of soil erosion and nutrient runoff, which can harm nearby water bodies. Organic farmers are increasingly viewing soil as an asset that requires care and investment, making mycorrhizae-based biofertilizers an attractive solution. In addition, consumer awareness about the environmental and health benefits of organic products has been a driving force behind the growth of the organic farming sector. Organic produce is perceived as safer and more nutritious, as it is free from synthetic chemicals, genetically modified organisms (GMOs), and artificial additives. As consumers become more health-conscious and eco-aware, they are willing to pay a premium for organic products. To meet this growing demand, organic farmers are under pressure to maximize their crop yields and maintain product quality. Mycorrhizae-based biofertilizers offer a natural and sustainable way to achieve these goals, making them an attractive choice for organic growers aiming to deliver high-quality products to the market. Therefore, the demand for organic and natural farming led to the growth of

North America Mycorrhizae Based Biofertilizers Market.

Increasing Demand of Mycorrhizae Based Biofertilizers in Non Agricultural Sector

While mycorrhizae-based biofertilizers have long been recognized for their benefits in agriculture, their applications are not limited to farming alone. In recent years, there has been a noticeable surge in the demand for these biofertilizers in non-agricultural sectors. Industries ranging from forestry to horticulture, landscaping to ecological restoration, and even the pharmaceutical sector are increasingly turning to mycorrhizae-based biofertilizers for their unique advantages. In forestry and reforestation efforts, mycorrhizae-based biofertilizers have gained traction for their ability to enhance tree growth and establishment. These biofertilizers help improve nutrient uptake and root development, which are critical factors in successful afforestation projects. By fostering mycorrhizal associations between tree roots and beneficial fungi, foresters can accelerate reforestation efforts, restore degraded ecosystems, and mitigate the impacts of deforestation. Mycorrhizae-based biofertilizers also play a vital role in restoring biodiversity in damaged ecosystems. As forests are essential for carbon sequestration, protecting water resources, and maintaining habitat for wildlife, the demand for biofertilizers that support healthy forest ecosystems is on the rise.

Moreover, in the horticulture and ornamental plant cultivation sector, mycorrhizae-based biofertilizers are increasingly sought after for their ability to promote plant health and enhance the aesthetics of landscapes. These biofertilizers stimulate root growth, leading to stronger and healthier plants. Additionally, mycorrhizal associations can help ornamental plants withstand environmental stressors such as drought and disease. Landscapers and gardeners are incorporating mycorrhizae-based biofertilizers into their practices to create vibrant and sustainable landscapes. The demand for these biofertilizers is driven by the desire to reduce the use of chemical fertilizers and pesticides in landscaping and gardening, aligning with the broader trend towards eco-friendly and sustainable landscaping practices. Along with this, in construction and infrastructure development, mycorrhizae-based biofertilizers are used for erosion control and soil stabilization. These biofertilizers help establish vegetation on slopes and disturb soils, preventing erosion and soil degradation. By enhancing root development and nutrient uptake, they contribute to the long-term stability of construction sites, highways, and embankments. Mycorrhizae-based biofertilizers offer a sustainable alternative to traditional erosion control methods, such as the use of synthetic materials and mechanical stabilization. They not only reduce environmental impact but also promote the establishment of native plant species, further enhancing biodiversity.

Furthermore, ecological restoration projects, aimed at rehabilitating degraded ecosystems, are increasingly turning to mycorrhizae-based biofertilizers to accelerate the recovery process. These biofertilizers facilitate the establishment of native vegetation by enhancing nutrient cycling, improving soil structure, and increasing resistance to environmental stressors. Restoration efforts in wetlands, grasslands, and riparian zones often involve the use of mycorrhizae-based biofertilizers to reintroduce native plant species and rehabilitate habitats for wildlife. The demand for biofertilizers that support ecological restoration aligns with the global push for environmental conservation and habitat restoration. Even in aquaculture and hydroponic systems, where traditional soil-based agriculture is not applicable, mycorrhizae-based biofertilizers find their niche. In hydroponics, these biofertilizers can promote root health and nutrient uptake, improving the growth of crops grown in nutrient solutions. Similarly, in aquaculture, mycorrhizal associations with aquatic plants can enhance nutrient cycling and water quality. As aquaculture and hydroponics gain prominence as alternative food production methods, the demand for biofertilizers that support plant growth in these systems is expected to grow. Additionally, in controlled environments like greenhouses and indoor plant cultivation, mycorrhizae-based biofertilizers are utilized to optimize plant growth and crop yields. These biofertilizers help ensure that plants receive adequate nutrients, even in confined spaces. As controlled environment agriculture becomes increasingly popular for year-round production, mycorrhizae-based biofertilizers offer a sustainable and efficient means of nutrient management. Greenhouse growers are particularly interested in mycorrhizae-based biofertilizers because they reduce the need for synthetic fertilizers and promote healthier, more resilient crops. The demand for these biofertilizers in controlled environments is driven by a combination of economic and environmental factors. The large number of benefits of mycorrhizae based biofertilizers is anticipated to drive the demand of North America Mycorrhizae Based Biofertilizers Market in the forecast period.

Rising Demand of Mycorrhizae Based Biofertilizers in Seed Treatment

In the world of agriculture, maximizing crop yield and ensuring plant health have always been top priorities for farmers. To meet this goal, farmers employ various strategies, including the use of fertilizers and pesticides. However, in recent years, there has been a notable shift toward sustainable and eco-friendly farming practices, and seed treatment with mycorrhizae-based biofertilizers has gained prominence. Seeds are the foundation of agriculture. They carry the genetic potential of a crop and hold the key to its future performance. When it comes to crop production, starting with high-quality seeds is essential. Ensuring that seeds germinate uniformly, develop strong roots, and resist diseases and environmental stressors is crucial for achieving optimal crop yields.

and quality. Seed treatment plays a pivotal role in this process. Mycorrhizae-based biofertilizers are formulated products that contain these beneficial fungi. When applied to seeds or directly to the soil at planting, these biofertilizers establish a symbiotic relationship between the plant and the mycorrhizal fungi, facilitating nutrient uptake and enhancing overall plant health. Mycorrhizal associations significantly improve the absorption of essential nutrients, especially phosphorus and micronutrients, which are critical for early seedling development. Mycorrhizae stimulate root growth, resulting in stronger and more extensive root systems that can explore a larger soil volume for nutrients and water. Mycorrhizal fungi help plants cope with environmental stressors such as drought, salinity, and soil pH imbalances, ensuring that seedlings are better equipped to thrive under challenging conditions. Some mycorrhizal species produce antimicrobial compounds that protect plants from soil-borne pathogens, reducing the need for chemical fungicides. By enhancing nutrient availability and disease resistance, mycorrhizae-based biofertilizers reduce the reliance on synthetic fertilizers and pesticides in seed treatment and early crop growth. Mycorrhizae-based biofertilizers are environmentally friendly and contribute to sustainable farming practices by reducing the environmental impact associated with chemical treatments. Thus, these factors dominate the growth of North America Mycorrhizae Based Biofertilizers Market in the forecast period.

Key Market Challenges

Inconsistent Product Quality

Ensuring consistent product quality is crucial for the success of mycorrhizae-based biofertilizers. The effectiveness of these biofertilizers depends on the viability and quality of the mycorrhizal spores or propagules they contain. Variability in product quality can lead to unpredictable results in the field, which can undermine farmer confidence in the product. Maintaining high product quality requires rigorous quality control measures throughout the production and distribution process. It also involves optimizing storage conditions to preserve the viability of mycorrhizal propagules. Manufacturers must invest in research and development to enhance product stability and ensure that each batch meets specified quality standards. Furthermore, mycorrhizae-based biofertilizers offer long-term benefits, they can be perceived as expensive in the short term. The initial investment required for purchasing and applying biofertilizers can be higher than traditional chemical fertilizers. This cost challenge is especially significant for small and resource-constrained farmers who may be hesitant to switch to biofertilizers.

Environmental Conditions and Soil Variability

The effectiveness of mycorrhizae-based biofertilizers can be influenced by environmental conditions and soil variability. Factors such as temperature, pH levels, and soil type can affect the establishment and growth of mycorrhizal associations. In some regions, these factors may not be conducive to mycorrhizal colonization, limiting the potential benefits of biofertilizers. Moreover, the mycorrhizae-based biofertilizers market in North America is becoming increasingly competitive. While competition can drive innovation and product development, it also poses challenges for smaller companies trying to enter the market. Established players often have the resources and distribution networks to dominate the market, making it difficult for newcomers to gain a foothold.

Compatibility with Other Agricultural Inputs

In modern agriculture, farmers often use a variety of inputs, including chemical fertilizers, pesticides, and herbicides. Compatibility issues can arise when mycorrhizae-based biofertilizers interact with these other inputs. For example, some chemical fertilizers can harm mycorrhizal fungi, reducing their effectiveness. To address this challenge, manufacturers need to provide clear guidance on the proper timing and application methods for mycorrhizae-based biofertilizers in conjunction with other agricultural inputs. Research and testing should also focus on identifying the most compatible combinations of inputs to maximize crop yields and soil health.

Key Market Trends

Customized Solutions for Different Crops

The significant trend in the North America mycorrhizae-based biofertilizers market is the development of customized solutions for different crops. Agricultural experts are recognizing that not all crops and soil types have the same requirements. To maximize the benefits of mycorrhizae-based biofertilizers, manufacturers are tailoring their products to meet the specific needs of various crops, such as corn, soybeans, tomatoes, and grapes. Customized formulations consider factors like pH levels, nutrient requirements, and environmental conditions, ensuring that the mycorrhizae-based biofertilizers are most effective in enhancing crop yields and quality. This trend is driving greater acceptance of biofertilizers across a wide range of agricultural practices and crop types. Moreover, farmers are increasingly adopting holistic approaches to farming that prioritize long-term soil health and ecosystem stability. Mycorrhizae-based

biofertilizers contribute to these goals by fostering beneficial interactions between plants and soil microorganisms. Consequently, the market is witnessing increased interest from environmentally conscious growers and stakeholders.

Increased Research and Development

The mycorrhizae-based biofertilizers market in North America is benefiting from ongoing research and development efforts. Scientists and agricultural experts are continually studying the interactions between mycorrhizal fungi and plants to develop more effective and efficient biofertilizer products. These efforts aim to optimize the selection of mycorrhizal species for different crops and soil types. Moreover, innovations in production techniques and formulation methods are improving the shelf life and ease of application of mycorrhizae-based biofertilizers. This increased focus on R&D is expected to result in products that offer better performance, ensuring their wider adoption in the agriculture sector.

Furthermore, government support and regulatory initiatives are playing a pivotal role in the adoption of mycorrhizae-based biofertilizers. In region, several government agencies and organizations are promoting sustainable agriculture practices and encouraging farmers to reduce their reliance on synthetic fertilizers and pesticides. These initiatives include financial incentives, subsidies, and educational programs to raise awareness about the benefits of biofertilizers.

Segmental Insights

Type Insights

Based on the type, the endomycorrhizae segment is expected to register the highest growth of 7.32% during the forecast period 2024-2028, on account of the potential to revolutionize modern agriculture. This growth can be attributed as endo-mycorrhizae enhancing water absorption efficiency, mitigating water stress, and boosting resilience to drought, have garnered growing favor among farmers. Moreover, endomycorrhizae create intricate structures known as arbuscules, facilitating effective nutrient interchange between the fungus and the plant, thus fostering mutually beneficial growth advantages which leads to the growth of North America Mycorrhizae Based Biofertilizers Market during the forecast period.

Form Insights

Based on the form, the liquid segment is expected to register the highest growth of 7.42% during the forecast period 2024-2028, as liquid mycorrhizae-based biofertilizers is their ability to significantly enhance nutrient absorption by plants. Mycorrhizal fungi establish a symbiotic relationship with plant roots, extending the root system's reach and increasing its capacity to absorb essential nutrients, particularly phosphorus and nitrogen. In liquid form, these biofertilizers are readily absorbed by plant roots, leading to quicker and more efficient nutrient uptake.

Mode of Application Insights

Based on the mode of application, the soil treatment segment is expected to register the highest growth of 7.76% during the forecast period, 2024-2028. This can be ascribed due to their ease of application. Soil treatment approaches are quite straightforward and harmonize well with established agricultural techniques, ensuring accessibility for a broad spectrum of farmers. Furthermore, the application of biofertilizers containing mycorrhizal spores and mycelium to the soil is executed through diverse methods, including blending it with the soil at planting, distributing it across the soil surface, or delivering it to the root zone through irrigation systems, all contributing to enhanced plant growth that boost the growth of North America Mycorrhizae Based Biofertilizers Market during the projected period.

Application Insights

Based on the application, the agriculture segment is expected to register the highest growth of 7.06% during the forecast period, 2024-2028. The heightened production of various food items, encompassing cereals, grains, fruits, vegetables, and more, to foster the development of nutritious products has led to increased demand. Notably, the mycorrhizae based biofertilizers market is influenced by the mounting pressure stemming from population growth, resulting in a substantial surge in agricultural demand. Consequently, this has propelled a significant expansion of the market.

Country Insights

United States will witness fastest growth during the forecast period, 2024-2028. This is because United States is often associated with conventional agriculture, and there has been a growing interest in sustainable and regenerative farming practices. As well as presence of large number of key players, contributing to the expansion of the North America Mycorrhizae Based Biofertilizers Market.

Key Market Players

Premier Tech Ltd

Plant HealthCare plc

Valent BioSciences LLC

Lallemand Inc.

Helena Agri Enterprises LLC

Symborg, Inc. (A Corteva Agriscience Business)

Tainio Biologicals, Inc.

Sustainable Natural Fertilizer, Inc

Report Scope:

In this report, the North America Mycorrhizae Based Biofertilizers Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

North America Mycorrhizae Based Biofertilizers Market, By Type:

Endomycorrhizae

Ectomycorrhizae

North America Mycorrhizae Based Biofertilizers Market, By Form:

Liquid

Solid

North America Mycorrhizae Based Biofertilizers Market, By Mode of Application:

Soil Treatment

Seed Treatment

Fertilization Treatment

North America Mycorrhizae Based Biofertilizers Market, By Application:

Agricultural

Non-agricultural

North America Mycorrhizae Based Biofertilizers Market, By Country:

United States

Mexico

Canada

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the North America Mycorrhizae Based Biofertilizers Market.

Available Customizations:

The North America Mycorrhizae Based Biofertilizers Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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