

Soil Treatment - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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Abstracts

The Soil Treatment Market size is estimated at 28.45 billion USD in 2024, and is expected to reach 36.38 billion USD by 2029, growing at a CAGR of 5.04% during the forecast period (2024-2029).

Herbicides dominate the market due to their effectiveness through soil treatment methods

Herbicides accounted for the highest share of 73.24% in the utilization of soil treatment methods in 2022. These herbicides specifically target weed seeds, impeding their germination even prior to crop sowing. This approach has gained popularity due to its ability to proactively manage weed populations proactively, ensuring better crop establishment and overall weed control.

There is a growing trend toward adopting modern farming practices, including no-till and minimum-till farming. Herbicides may be applied through the soil treatment method with precision, targeting specific areas in the field where weed pressure is high, thereby optimizing herbicide use and reducing costs. These factors are driving the adoption of soil treatment for herbicide applications.

Insecticides accounted for a share of 13.14% of the global soil treatment market in 2022. Although the pupae and eggs in the soil are not affected by the normal doses of pesticides, larval and adult stages may be controlled by soil treatment. Pests like white grubs, wireworms, fungus gnats, and soil mealybugs may effectively be managed by soil application.

The utilization of soil treatment fungicides was predominantly focused on grains and cereals, representing the largest share of 45.9% in the market. This preference is driven by the effectiveness of fungicides in protecting the quality of grains and cereals, as they help prevent or reduce fungal infections.

The soil treatment of nematicides like aldicarb, fenamiphos, and oxamyl may effectively be employed in controlling microscopic nematodes like *Meloidogyne incognita* and *Pratylenchus brachyurus* that are known to cause significant losses in various crops.

Owing to the aforementioned factors, the market for soil treatment is anticipated to grow.

The rise in yield losses in major countries due to pests is driving the use of soil treatment

Soil-borne pests may have a significant global impact on agriculture and ecosystems. These pests include nematodes, fungi, bacteria, and insects that live in the soil and can damage crops, reduce yields, and disrupt ecosystems. Managing pests effectively is essential for ensuring food security and maintaining a stable food supply. During 2017-2022, the global crop protection chemicals market registered a CAGR of 5.7%.

In 2022, the soil treatment segment in South America held a substantial 43.0% share of the global market. From 2017 to 2022, the region witnessed a noteworthy increase in market value, accounting for USD 3,429.6 million. Growers commonly employ soil drenching, broadcast, and furrow application techniques for soil treatment. Enhancing the control of soil-borne diseases and pests through these methods improves crop yields. The growing emphasis on preserving soil health has prompted farmers to embrace these soil treatment approaches.

North America is the second leading country, holding a substantial 28.4% global market share. Soil-borne diseases are considered a major limitation of crop production. Soil-borne plant pathogens such as *Rhizoctonia* spp., *Fusarium* spp., *Verticillium* spp., *Sclerotinia* spp., *Pythium* spp., and *Phytophthora* spp. can cause 50% to 75% yield loss for many crops such as wheat, cotton, maize, vegetables, fruits, and ornamentals.

Therefore, the global soil treatment market value is expected to register a CAGR of

5.0% during 2023-2029 and is anticipated to witness significant growth in all crop types due to the changing climate and rising crop losses due to pest infestation.

Global Soil Treatment Market Trends

The increasing infestation of soil borne pest, diseases, and weeds, the per hectare consumption of soil treatment of pesticides is likely to increase globally

The global average consumption of crop protection chemicals through soil application mode was recorded as 2,345.0 g per ha of agricultural land in 2022, which increased by 13.6% compared to 2017, which was 2,065.0 g per ha.

The growing trend toward the adoption of modern farming practices, including no-till and minimum-till farming, is increasing the pest population in the soil, necessitating the soil application of pesticides to control pests, weeds, and soil-borne diseases.

Herbicides, specifically pre-emergent herbicides, are generally applied to soil as they specifically target weed seeds, impeding their germination even prior to crop sowing. This approach has gained popularity due to its ability to proactively manage weed populations proactively, ensuring better crop establishment and overall weed control.

The white grub infestation reduced the root system by approximately 25% in soybeans and 64% in maize. It was observed that *Phyllophaga capillata* and *Aegopsis bolboceridus* damaged all evaluated variables, reducing overall soybean productivity by 58.62% and maize productivity by 59.76% in South American countries like Brazil. All these soil-borne pests may effectively be controlled by soil application of insecticides.

Similarly, nematodes like *Meloidogyne incognita* and *Pratylenchus brachyurus* cause significant losses in fruit and vegetable crops. For instance, carrots are susceptible to considerable losses, averaging up to 20.0%. As these parasitic nematodes are soil-dwelling organisms, it is important to treat the soil with nematicides to kill these organisms.

Soil treatment pesticide usage is increasing with the need for controlling soil-borne diseases

Amid the dynamic landscape of the pesticide market, soil treatment pesticides stand out

as crucial components. These specialized chemicals play a pivotal role in fostering healthy crop growth, effective pest and disease control, and sustainable agricultural practices.

Cypermethrin is a pyrethroid insecticide that may be used as a soil treatment pesticide. When applied to the soil, it provides effective control against a variety of soil-borne pests, including termites and root maggots. Cypermethrin's mode of action involves targeting the nervous system of the pests upon contact, leading to paralysis and eventual death. It was priced at USD 21.0 thousand per metric ton in 2022.

Atrazine is an herbicide commonly used as a soil treatment to control various broadleaf and grassy weeds in agricultural fields and non-crop areas. It is particularly effective in managing weed populations that compete with crops for nutrients, water, and sunlight. In 2022, it was priced at USD 13.8 thousand per metric ton.

Malathion is an organophosphate insecticide used as a soil treatment to control a variety of insect pests in agricultural fields and non-crop areas. It is effective in managing both flying and crawling insects that may cause damage to crops and other plants. Malathion was priced at USD 12.5 thousand per metric ton.

Mancozeb is a fungicide and soil treatment used to control various fungal diseases such as damping-off, blight, and downy mildew. It belongs to the class of dithiocarbamates and is known for its broad-spectrum activity against a wide range of plant pathogens. In 2022, it was priced at USD 7.8 thousand per metric ton.

Soil Treatment Industry Overview

The Soil Treatment Market is moderately consolidated, with the top five companies occupying 41.17%. The major players in this market are ADAMA Agricultural Solutions Ltd, BASF SE, Bayer AG, FMC Corporation and Syngenta Group (sorted alphabetically).

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