

WORM CASTINGS

Nature's Miracle 100% Organic Soil Amendment

Environmentally Friendly Easy & Safe to Use

Lawn & Turf Care Insect & Weed Control Roses, Trees & Bushes Seeding & Potted Plants Greenhouses & Hydroponics Vineyards & Fruit Trees Indoor/Outdoor Plants Perennials & Annuals Pasture Management Green Roofs

All Purpose - Slow Release Increases Microbial Diversity Repels Insects - Fights Diseases Improves Drought Resistance

RESIDENTIAL & COMMERCIAL ORDERS NOW BEING TAKEN FOR SPRING DELIVERY

For more information:

www.csrplus.com vermigrow@csrplus.com - Tel: 905-487-8442

Produced by CSRplus Vermicast Industries Locally Produced - Product of Canada

What is VermiGrow?

VermiGrow Worm Castings is quite simply Mother Nature's soil enhancement of choice. This rich humuslike digested output of the worm includes an almost complete range of nutrients and microbial life that a plant requires to grow. It is one of the most natural soil enrichments available; it is environmentally friendly; all natural; easy to use; and safe to handle with a pleasant earthy aroma.

What Does It Do?

Healthy soil is important to produce quality plants. VermiGrow Castings improve soil health in a number of ways.

- It is a natural source of organic matter with lots of nutrients and moisture-holding capacity. It holds 5-9 times its weight in moisture and is beneficial in offsetting the impacts of drought conditions.
- It adds active microbial life to the soil allowing it to slowly release and make the valuable nutrient and trace minerals more available to tender plant roots.
- VermiGrow[™] is rich in growth hormones, vitamins, and acts as powerful biocide against diseases and nematodes.
- As a natural aerator, VermiGrow allows oxygen to permeate the root zone to improve drainage and encourage root growth.
- Castings enhance or replace other soil mediums and additives without fear of burning or harming tender plant life.

VermiGrow creates the right soil environment and makes nutrients more available to crops and desired vegetation, thereby reducing the need for synthetic fertilizers and pesticides. Best of all, VermiGrow contains no toxins and therefore is safe to use without fear of ground water contamination.



How Is It Different From Compost?

VermiGrow is significantly better than compost; it is carefully selected compost fully digested by worms, making it an entirely mature product. It does not contain any pathogenic agents and is a biological product that is convenient to handle.

VermiGrow contains far more diverse microbial population than composts. These microorganisms play an important part in soil fertility. Not only do they mineralize complex substances into plant-available nutrients but bacteria in the worm's digestive system also synthesize a whole series of biologically active substances, including plant growth hormones.

How Is It Different From Fertilizers? 1

- VermiGrow contains the full range of macronutrients (nitrogen, phosphorus and potassium) all in sufficient quantities, as opposed to just the one or two in fertilizers.
- VermiGrow contains much needed secondary nutrient contents such as calcium, manganese and sulphur, not available in chemical fertilizers.
- VermiGrow Castings, unlike fertilizers, also provide a range of micronutrient contents such as zinc, boron, manganese, iron, copper, molybdenum and chlorine.
- While chemical fertilizers distort soil pH (which creates saline and alkaline conditions, castings help control soil pH and correct salinity and alkalinity.
- VermiGrow helps to balance soil EC to improve plant nutrient adsorption; in contrast, chemical fertilizers create an imbalance in soil EC that affects nutrient assimilation,
- VermiGrow, unlike chemical fertilizers, provides very high organic carbon and humus contents to improve soil characteristics.
- VermiGrow increases moistures retention capacity of the soil while synthetic fertilizers reduce moisture retention capacity of the soil.
- VermiGrow improves soil texture for better aeration, while fertilizers tend to damage soil texture and reduce aeration.
- The very high biological life in VermiGrow improves soil fertility and productivity on a sustainable basis; in comparison, fertilizers reduce biological activities and impair fertility.
- Vermigrow supports plant development and production by providing sufficient quantities of plant growth hormones not available in synthetic fertilizers.

¹ M.R. Morarka-GDC Rural Research Foundation; <u>www.morarkango.com/vermiculture/vermicast specification.hl</u>

How VermiGrow Works

VermiGrow is an all-purpose natural soil amendment that is pure earthworm castings. It is 100% non-toxic and odorless. It is the product of aerobically composted and "sanitized" organic waste matter fed to earthworms free from weed seeds, toxins and pathogens.

It Improves Soil Structure

VermiGrow improves soil structure in all soil types. The term soil structure describes the way soil particles group together into aggregates. Biological activity, organic matter, cultivation, and tillage practices affect soil structure and impact soil fertility.

An ideal soil structure is granular or crumb-like. It provides for good movement of air and water through a variety of different pore sizes. Plant roots extend down and soil animals, including small earthworms, travel through the spaces between the aggregates. An ideal soil structure is also stable and resistant to erosion. The clayhumus complex, in combination with adequate calcium, which helps to bind the aggregates together, forms the basis of this structure. The glutinous by-products of soil bacteria and the hair-like threads of actinomycets and fungi mycelium add to soil stability.

All tillage operations change soil structure. Excessive cultivation, especially for seedbed preparation, can harm soil structure. Working clay soils when wet leads to compaction and subsequent soil puddling. The soil is easily puddled by rain, easily eroded and will have poor aeration. Tillage, when too dry, shatters the aggregates. Careful cultivation, growing sod crops and returning crop residues can enhance soil structure.

VermiGrow and the humification process improve structural stability and can rebuild degraded soil structures. It is vital to return organic material to the soil and to maintain its biological activity, which helps to improve the soil structure.



How It Works With Soil pH

VermiGrow acts like a buffer for plants where soil pH levels are too high or low making soil nutrients available again to the plant. Castings are much higher in bacteria, organic material and available nitrogen, calcium, magnesium, phosphorus and potassium than soil itself. VermiGrow is biologically active and continues to condition soils for up to four years.

Soil Biology

Soil organisms play an important role in forming and stabilizing soil structure. In a healthy soil ecosystem, fungal filaments and exudates from microbes and earthworms help bind soil particles together into stable aggregates that improve water infiltration and protect soil from erosion, crusting and compaction. Macrospores formed by earthworms facilitate the movement of water into and through soil. Good soil structure enhances root development, which further improves the soil.

By improving or stabilizing soil structure, soil organism dynamics help reduce runoff and improve the infiltration and filtering capacity of soil. In a healthy soil ecosystem, soil organisms reduce the impact of pollution by buffering, detoxifying and decomposing potential pollutants.

In a healthy soil ecosystem, soil biota regulates the flow and storage of nutrients in many ways. For example, they decompose plant and animal residue; fix aospheric nitrogen; transform nitrogen and other nutrients among various organic and inorganic forms; release plant available forms of nutrients; mobilize phosphorus; and form mycorrhizal (fungus-root) associations for nutrient exchange.

A relatively small number of soil organisms cause plant disease. A healthy soil ecosystem has a diverse soil food web that keeps pest organisms in check through competition and predation. Some soil organisms release compounds that enhance plant growth or reduce disease susceptibility. Plants may exude specific substances that attract beneficial organisms or repel harmful ones, especially when they are under stress, such as grazing.



Microbial Activity

VermiGrow stimulates microbial activity. Although earthworms derive their nutrition from microorganisms, many more microorganisms like bacteria, fungi, actinomycetes are present in their feces or casts than in the organic matter that they consume. As organic matter passes through their intestines, it is fragmented and inoculated with microorganisms. Increased microbial activity facilitates the cycling of nutrients from organic matter and their conversion into forms readily taken up by plants.

Compared to synthetic fertilizer formulations, VermiGrow contains relatively low concentrations of actual nutrients, but they perform important functions that the synthetic formulations do not. Castings increase the organic content and consequently the water-holding capacity of the soil. They improve the physical structure of the soil, which allows more air to get to plant roots. As a source of organic matter, castings increase necessary bacterial and fungal activity in the soil. MycorrhIzal fungi, which make other nutrients more available to plants, thrive in soil where the organic matter content is high.

Water Availability

VermiGrow contains a high percentage of humus. Humus helps soil particles form into (clusters, which create channels for the passage of air and improve its capacity to hold water. The castings are in the form of tiny pellets coated with a gel. This crumb-like structure helps improve drainage and aeration.





Balancing Soil Nutrients

Microbiologically active VermiGrow has the ability to regenerate nutrients from the aosphere, organic matter and water and can effectively replace the nutrients lost as a result the leaching caused by chemical fertilizers. Chemical fertilizers have negligible effect on improving the moisture holding capacity and structure of soil as they primarily consist of watersoluble salts. Worm castings, on the other hand, due to the aggregate nature of the castings, has significant water holding capacity and its use leads to improved soil structure, as well as increased nutrient reserves in soil.

The presence of nitrifying and nitrogen fixing bacteria in VermiGrow helps fix nitrogen from the aosphere and convert it to plant soluble nitrates.

VermiGrow is rich in humus, which contains essential plant nutrients and micronutrients along with vitamins, beneficial microorganisms, antibiotics and enzymes.

VermiGrow is the most complete organic fertilizer. It will not wash out with watering or burn even delicate plants. VermiGrow has a very soil-like texture and all the necessary nutrients that plants and crops require. Castings slowly release nutrients when required by the plants. They are high in soluble nitrogen, potash, potassium, calcium, magnesium and many other trace elements. VermiGrow quickly and easily allows plants absorb all essential nutrients and trace elements. This is possible because the earthworm grinds and uniformly mixes the nutrients and trace elements into simple forms (1-2 microns). As a result, plants need only minimal effort to absorb these nutrients.





SUGGESTED APPLICATION RATES

Potted Plants, Seeds, Seed Flats

- Use 1 part VermiGrow to 3 parts potting soil mix

Potted Plants, window Boxes or Hanging Baskets (Established)

- Add 10%-20% of VermiGrow to top of soil
- Mix in taking care not to damage shallow roots
- Water well
- Repeat every 2-3 months

Lawns (Established)

- Use as a top dressing at 4 Litres per 3 sq. m (100 sq. ft.)
- Apply twice a year in spring and once again late fall

Lawns (New)

- Apply 10-15 Litres per 3 sq. m (100 sq. ft.)
- Work lightly into top soil
- Mix in grass seed
- Cover with shredded straw and keep watered

Roses, Tress, Bushes and Berries (New or freshly planted)

- Mix 1 part VermiGrow to 3 parts soil
- Surround newly dug hole with mixture
- Spread root over a mound of the mixture and cover

Bushes

- 5 Litres of VermiGrow per 10 Bushes

Perennials

- Work 120 ml (1/2 cup) into soil above root zone taking care not to damage the shallow roots. Apply in Spring, early Summer and Fall

Table & Annual Flowers

- Line bottom and sides of plant holes and seed furrows with 2.5 cm-5 cm (1-2 inches) of VermiGrow
- Set plant/seeds in place and cover with soil
- Side dress during growing season at rate of 120 ml per plant or 240 ml per linear foot of row once every 2 months

Gardens

- Apply 5 Litres per square meter

Note: The release time for nutrients is around 4 months for continual release of nutrients. Repeat application is recommended at 4 month intervals. Application rates may vary depending upon soil test results.



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