



**PRODUCER OF ORGANIC
FERTILIZERS**

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In the 21st century, urbanization is a global, national, and regional challenge that is becoming increasingly important. Supplying the growing population with food can primarily be achieved in two ways:

- Increasing the cultivation area
- Enhancing efficiency at the unit level

Given the climatic conditions in many countries, the expanses of arable land are not readily expandable. Consequently, the emphasis should be on enhancing efficiency.

ZarinKhosheHamoun Company (Biogano Max) has started its operations to establish a suitable and expedient platform. With the approval and implementation of a sound policy, the company focuses on the production of organic fertilizers and the development of organic product manufacturing. Accordingly, the need to use healthy food for the individual, coupled with the belief in the ability of ecological production methods to achieve noble social goals such as environmental protection, drives this company towards organic fertilizer production.

Biogano emphasizes the connection between the quality of agricultural products and the well-being of animals and humans with the health of the soil. According to this perspective, soil, relying on its biological activities without external energy inputs, should sustain its fertility over an extended period, yielding high-quality products. This holistic approach not only aids in preserving the health and vitality of individuals, mitigating diseases associated with chemical fertilizers but also results in heightened production and economic advantages for farmers.

It is anticipated that this company will take significant steps toward promoting human health...

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Organic matter (OM)

Organic matters are carbon-based compounds produced by plants, animals, and microorganisms in the soil. The presence of these compounds not only indicates the health and quality of the soil but also serves as a suitable indicator for its fertility. This can be a result of the interaction of physical, chemical, and biological soil processes.

OM improves soil structure and porosity. In cases where the soil is compacted with permeability, the accumulation of carbon dioxide around the roots increases. This CO₂ accumulation not only leads to root suffocation but also hinders the absorption of nutrients required for metabolic energy. Additionally, OMs, due to various functional groups such as carboxyl, phenolic, alcoholic, and hydroxyl groups, increase the cation exchange capacity of the soil. This helps in better retention of nutrients in the soil, allowing plants greater access to them. Furthermore, these organic compounds release a significant amount of both high and low-consumption nutrients into the soil through mineralization, contributing significantly to the balanced nutrition of plants. OMs also increase the microbial population in the soil, playing a crucial role in the decomposition of organic and mineral materials, thus aiding in soil mineralization. As the mineralization process continues, stable organic compounds accumulate in the soil, leading to the formation of humus. In soil lacking or having a minimal amount of OM, the microbial population is significantly diminished. This leads to a compromised ability to absorb many essential nutrients, as their availability for plants is dependent on biological oxidation in the soil.

Today, particular attention is devoted to integrated plant nutrition management, where the combination of organic and biological sources, along with the optimal use of targeted chemical fertilizers, leads to the improvement and preservation of soil fertility.

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OMs contribution to soil

These compounds play a crucial role in improving the physicochemical properties of soil, influencing plant growth, and serving the following functions:

- Source of nutrients for plants
- Enhancement of microbial activity
- Increase in cation exchange capacity, porosity, moisture retention, soil structure, and buffering via enhancing the physicochemical properties of soil, organic materials contribute to increased cation exchange capacity, soil porosity, moisture retention, and the overall structure and buffering capacity of the soil.
- Humic substances indirectly influence the uptake of microelements by plants, effectively mitigating the adverse effects of chemical substances in the soil.

BioganoMax liquid sulfur organic (S+)

Analysis of biogano liquid sulfur fertilizer compounds (%W/W):

Soluble sulfur [S]	SO ₄	K ₂ O	N	O.C	O.M
24	0	15	4	13	28

Increased tolerance levels of proteins and vitamins

Enhanced plant resistance to cold

Correction of calcareous and alkaline soils

Acidification of the rhizosphere due to S oxidation

Increased solubility and absorption of nutrients from the soil

Fungicidal, nematicidal, and pest-repellent properties

Sulfur (S) is the fourth essential and highly-consumed element for plants after N, P, and K. The plant's need for S is even greater than other essential elements such as phosphorus. As most soils in Iran are alkaline and calcareous and the lack of OM limits the solubility of essential and micronutrients, the uptake of these elements in the root growth environment is practically slow.

ThereductiveS is the best type of this element for absorption in plants. The associated fertilizers in the form of sulfates need to be reactivated in the first stage to convert amines. Biogano Liquid Organic S is in the form of reductiveS as K thiosulfate. Consequently, the plant requires less energy to convert sulfate to the reactivated form, aiding in the production of amino acids. By activating the nitrate reductase enzyme, this product prevents the accumulation of nitrates in the plant, resulting in a healthier yield. Moreover, this product facilitates the better oxidation of S in the soil due to its active organic carbon content, lowers the soil pH, and increases the absorption of micronutrients. Biogano's Liquid Organic S boasts both nutritive and fungicidal properties. This 100% soluble solution sets it apart from conventional S fertilizers. It enhances the absorption of other elements, promotes plant growth, and contributes to both qualitative and quantitative yield improvement. Moreover, liquid S activates beneficial soil bacteria, facilitating biological oxidation in the soil. Especially in winter conditions, it facilitates the movement of essential elements within the plant, playing a pivotal role in enhancing overall plant performance.

*** Soil application (L/ha); foliar spraying L/thousand**

Cultivation type	Consumption method	Consumption dosage	Considerations
Field	Soil application	10-15	3-4 leaf stage before flowering
	Foliar spraying	2-3	Over growth period
Orchard	Soil application	10-20	After the first irrigation
	Foliar spraying	2-5	Over growth period
Greenhouse	Soil application	5-10	3-4 leaf stage
	Foliar spraying	2-3	Over growth period
Other products	Soil application	5-10	
	Foliar spraying	2-3	Over growth period

Consumption method and dosage

Organic Potassium Biogano Max K+

Analysis of Biogano potassium fertilizer compounds (%W/W):

K ₂ O	N	O.C	O.M
30	4	6	12

Increased marketability and size of fruits

Extended shelf life of the harvested produce

Accelerated fruit ripening

Improved product quality

Prevention of water and drought stress

Resistance against diseases and pest attacks



Potassium (K⁺) plays a primary role in the size, quality, and shape of fruits. Organic K⁺BioganoMax fertilizer is in carboxylate form, ensuring maximum absorption in plants. It contains an appropriate amount of active carbon, which, by increasing the activity of beneficial soil microorganisms, facilitates the absorption of K and other nutrients for the plant, ultimately improving nutrient uptake.

Consumption method and dosage

Cultivation type	Consumption method	Consumption dosage	Considering
Field	Soil application	10-25	During the growth period
	Foliar spraying	3-5	
Orchard	Soil application	20-25	Before and after fruit formation Up to two weeks before harvest
	Foliar spraying	3-5	
Greenhouse	Soil application	10-15	3-4 leaf stage, the beginning of fruit-setting during the growth period
	Foliar spraying	3-5	
Other products	Soil application	15-25	3-4 leaf stage up to two weeks before harvest
	Foliar spraying	3-7	

* Soil application (L/ha); foliar spraying L/thousand

BioganoMaxP+ phosphorus organic

Analysis of Biogano phosphorus fertilizer compounds (%W/W)

P2O5	K2O	N	O.C	O.M
20	13	3	7	16

Increased root development in plants

Enhanced absorption of nutrients

Increased flowering and crop production

Uniformity in crop maturity

Reduced time to harvest

Strengthened stems and increased fruit size



Phosphorus (P) is one of the essential elements for plant growth, playing a crucial role in energy production and transfer within the plant. This element is highly necessary for the growth and development of plant roots and reproductive systems (flowers) in the soil. In agricultural lime soils, due to the high Ca content, phosphorus precipitates in the form of Ca phosphate, which is non-absorbable by plants. Organic Phosphate BioganoMax fertilizer, with its effective organic compounds, prevents the binding of phosphorus with Ca. Consequently, the efficiency of P utilization in plants increases. Additionally, the organic compounds in the fertilizer activate and enhance beneficial soil microorganisms, leading to the secretion of phosphatase in the soil. This contributes significantly to the solubility of phosphorus in the soil, including Caphosphates. This fertilizer contains a balanced amount of nitrogen (N) and potassium (K).

Consumption method and dosage

Cultivation type	Consumption method	Consumption dosage	Considerations
Field	Soil application	10-15	3-4- leaf stage
	Foliar spraying	3-5	From the beginning of growth to before flowering
Orchard	Soil application	10-30	Before bud swelling and first watering
	Foliar spraying	3-5	During the growth period
Greenhouse	Soil application	5-10	3-4- leaf stage
	Foliar spraying	3-5	From the beginning of growth to before flowering
Vegetable	Soil application	5-15	3-4leaf stage, every two weeks until the flowering
	Foliar spraying	3-5	

* Soil application (L/ha); foliar spraying L/thousand

Organic Liquid Potassium Silicate BioganoMax

Analysis of biogano potassium silicate liquid fertilizer components (%W/W)

SiO ₂	K ₂ O	N	O.C	O.M
20	11	3.5	9	20

Increased strength of cell walls and improved post-harvest shelf life

Increased resistance to pests, diseases, and stresses

Increased resistance to lodging in crops such as rice, sugarcane, and cereals

Increased plant production, yield, and biomass

Enhanced photosynthesis and better light absorption

Increased phosphorus absorption, reduced N utilization, and control of phosphorus accumulation in plants, thereby preventing Zn deficiency

Silicon (Si) is the second most abundant element in the Earth's crust, accumulating in the epidermal tissues of leaf and root cells in the form of silica gel. This presence enhances the hardness and strength of plant tissues. The above fertilizer comprises vital elements including Si, N, K, organic carbon, and OM. The inclusion of Si specifically contributes to stem fortification, inducing a woody structure. Furthermore, it enhances the robustness of fruits, extending their durability during storage. Notably, the enhanced Si content elevates the plant's resilience against pests and diseases by forming sharp and woody cracks on leaf surfaces, presenting a deterrent to insects such as mites and aphids. In crops like rice, sugarcane, and cereals, it serves as a preventive measure against lodging and promotes sturdy produce. The presence of K in this product, besides improving the quality and marketability of fruits, contributes to the plant's resistance to various stresses and diseases. Another advantage of this product is the significant amount of carbon and OM, which enhances the absorption of other elements.

Consumption method and dosage

Cultivation type	Consumption method	Consumption dosage	Consumption time
Field	Soil application	5-15	One month after planting until the beginning of fruit-setting
	Foliar spraying	2-3	
Orchard	Soil application	5-20	First irrigation
	Foliar spraying	2-3	The beginning of fruit-setting
Greenhouse	Soil application	5-10	4-5 leaf stage to beginning of fruit-setting
	Foliar spraying	1-2	
Other products	Soil application	5-10	4-8 leaf stage to beginning of fruit-setting
	Foliar spraying	2-3	

***Soil application (L/ha); foliar spraying L/thousand

Organic Calcium Chelate (Ca-Chelate %9)

Analysis of Biogano chelated calcium fertilizer compounds (%W/W):

Ca-Complexed	A.A	O.C	O.M
9	5	5.5	8

Stem strength

Reduction of soil salinity

Prevention of fruit drop and softening

Increased shelf life and marketability of fruits

Increased diameter and size of buds in cut branch flowers

Calcium (Ca) is a divalent element that exhibits immobility within plants. Consequently, its deficiency first becomes apparent in the young parts of the plant, affecting both leaves and fruits. Ca deficiency is frequently found in acidic soils and those prone to high leaching. BioganoMax, an Organic Ca Chelate enriched with amino acids, offers elevated levels of Ca with remarkable absorption capabilities. Its unique advantage over other Ca-chelates is associated with its amino acid content, which enables it to penetrate the central structure of the cell and strengthen the cell walls. Furthermore, by reducing the activity of enzymes that generate ethylene, it reinforces fruit firmness, thereby enhancing post-harvest storage qualities. Notably, it serves as a preventive measure against physiological diseases.

Consumption method and dosage

Cultivation type	Consumption method	Consumption dosage	Consumption time
Field	Soil application	5-10	Over all plant growth stages
	Foliar spraying	3	
Orchard	Soil application	5-30	
	Foliar spraying	2-5	
Greenhouse	Soil application	5-10	
	Foliar spraying	2.5	
Other products	Soil application	5-10	
	Foliar spraying	2.5	

***Soil application (L/ha); foliar spraying L/thousand

Organic Liquid BioganoMax 1 (NPK)

Analysis of bioganomax1 fertilizer compounds (%W/W):

P2O5	K2O	N	O.C	O.M
4.5	3.5	7	15	35

Increased plant performance

Enhanced absorption of nutrients

Increased crop production

Revitalization of beneficial soil microbes



This fertilizer contains a significant amount of organic carbon, enriched with N, phosphorus, and K in optimal proportions. The OM within aids in the harmonized absorption of essential nutrients such as N, phosphorus, and K. Recommending its consistent use throughout the plant growth cycle for enhanced performance and superior product quality. The active organic carbon in the formula stimulates the proliferation of beneficial soil microbes. Moreover, this fertilizer acts as a preventive measure against soil salinity and alleviates plant stress. A balanced organic carbon content in the soil signifies fertility, creating favorable conditions for robust plant growth and development.

Consumption method and dosage

Cultivation type	Consumption method	Consumption dosage	Consumption time
Field	Soil application	10-25	2-4 leaves until the middle of fruit setting
	Foliar spraying	---	---
Orchard	Soil application	10-20	Over all growth periods
	Foliar spraying	---	---
Greenhouse	Soil application	5-15	3-4 leaves before each harvest
	Foliar spraying	---	---
Other products	Soil application	5-20	2-4 leaf stage until the middle of fruit ripening
	Foliar spraying	---	---

***Soil application (L/ha); foliar spraying L/thousand

Organic Liquid BioganoMax 3 (Micro-Nutrient)

Analysis of biogano 3 liquid fertilizer compounds (%W/W)

K ₂ O	Cu	Fe	Zn	Mn	B	N	O.C	O.M
0.8	0.4	0.8	1.7	1	0.1	5.5	5	11

Swift correction of micro-nutrient deficiencies

Reduction in alternate bearing

Maintenance of balanced plant nutrition

Increased quality and quantity of the harvest, enhancing color, taste, nutritional value, and storage life

Enhanced plant resistance to cold and drought

Liquid BioganoMax 3 is an organic fertilizer containing predominantly macro and micro-nutrients, aiding in the nutrient balance of plants. This fertilizer is recommended during the early stages of plant growth or whenever needed throughout the plant's growth cycle. N, phosphorus, and K are essential nutrients for plants and play a crucial role in all growth stages, from root development to fruiting. In addition to macro-nutrients, micro-nutrients, or trace elements, are also of special importance at every stage of plant growth. Iron plays a pivotal role in the formation of chlorophyll, while Zn and B are essential for pollination and flower formation. Manganese contributes to fruit coloration, and copper is instrumental in enhancing plant resistance to stress, fungi, and bacteria.

Consumption method and dosage

Cultivation type	Consumption method	Consumption dosage	Consumption time
Field	Soil application	5-15	During fruit formation until the middle of fruit ripening
	Foliar spraying	3-5	
Orchard	Soil application	5-25	
	Foliar spraying	3-5	
Greenhouse	Soil application	5-10	
	Foliar spraying	3-5	
Other products	Soil application	5-10	
	Foliar spraying	3-5	

***Soil application (L/ha); foliar spraying L/thousand

Amino Acid Biogano Max

Biogano amino acid composition analysis (%W/W):

N	K ₂ O	P ₂ O ₅	CaO	Total A.A	Free A.A	O.C	O.M
4	2	2	2	10	5	15	32

Mg	Ca	Mn	Fe	Zn
1400	400PPM	20PPM	300PPM	40PPM

Plant resistance to various stresses (drought, flooding, salinity, heat, pests, diseases, air pollution such as high ozone levels and acid rain, etc.).

Growth of plant organs, plant nutrition, and increased yield.

The role of amino acids in enhancing plant stress resistance is characterized by their energy-saving function for the plant. The production of amino acids by plants is a highly energy-intensive process, particularly in adverse environmental conditions. Over the years, agricultural scientists have taken measures to counter amino acid deficiencies in plants and mitigate the undesirable effects that lead to diminished plant performance. Hence, they tend to produce fertilizers containing amino acids. Biogano Liquid Amino Acid is characterized as a growth stimulant that contains micronutrients and optimal quantities of essential amino acids that are crucial for plant development. The formulation of this fertilizer is designed to facilitate easy absorption of its amino acids by plants. With 10% total amino acids and 5% free amino acids of the L-type, BioGano Amino Acid improves the plant resilient to various environmental stresses. Additionally, the fertilizer contains a substantial amount of OM, along with N, phosphorus, K, and calcium, enhancing fruit and seed quality while extending the shelf life of harvested products. This product contributes to improved nutrient absorption, further supporting the overall health and vitality of plants.

Consumption method and dosage

Cultivation type	Consumption method	Consumption dosage	Consumption time
Field	Soil application	5-10	At all growth stages During and after environmental stress
	Foliar spraying	2-3	
Orchard	Soil application	5-20	
	Foliar spraying	3-7	
Greenhouse	Soil application	5-10	
	Foliar spraying	2-3	
Other products	Soil application	5-10	
	Foliar spraying	2-3	

***Soil application (L/ha); foliar spraying L/thousand

Organic Fruit Set Biogano

Biogano amino acid composition analysis (%W/W):

N	Zn	EDTA-Zn-chelate	B	O.C	O.M
5	6.3	6	0.5	5	11

Increased conversion of flowers into fruits

Improved fruit quality

Prevention of flower and fruit drop

Reduction in alternate bearing

Plant resistance to cold

Correction of husk spot in pistachio nuts



Organic Fruit Set Biogano fertilizer contains N, zinc (Zn), boron (B), and OM. It is highly effective in promoting the conversion of flower buds into fruits. This fertilizer contains Zn and B, which play a crucial role in facilitating the pollination process on the stigma of the female flower. N, along with OM, enhances the better absorption of these two elements (Zn and B). The application of this fertilizer is recommended at two distinct stages: during the bud swelling phase and post-fruit harvesting in orchards. Moreover, it is employed in vegetable cultivation to enhance the conversion of flowers into fruits. An additional benefit is the reduction in alternate bearing in fruit trees when using this fertilizer.

Consumption method and dosage

Cultivation type	Consumption method	Consumption dosage	Consumption time
Field	Foliar spraying	3-5	Before flowering
Orchard	Foliar spraying	2-5	Bud swelling and after harvest
Greenhouse	Foliar spraying	2-3	4-3leaf stage before flowering
Vegetables	Foliar spraying	2-3	4-8 leaf stage before flowering

* Soil application (L/ha); foliar spraying L/thousand

Humic Acid Biogano Max

Bioganohumic acid composition analysis (%W/W):

H.A	F.A	P2O5	K2O	N	O.C	O.M
8	2	3	4	5	7.5	17

Improvement of soil structure and granulation

Increased plant root development

Enhanced dissolution and release of macro and micronutrients, reducing the need for chemical fertilizers significantly

Increased resistance to stresses (salinity, water scarcity, and cold)

Reduction of toxicity from fertilizers and excess elements in the soil

Increased plant resistance to various diseases

Acceleration of seed germination

Environmental compatibility

Improved product quality

Humic acid, with dark brown color, is a key component of humic substances. This compound improves the physical, chemical, and biological structure of the soil, promoting better seed germination and root development in plants. Furthermore, it facilitates the absorption of other nutrients for the plant. This fertilizer contains humic acid and a certain amount of fulvic acid, which is used in the soil along with irrigation water. Humic substances can stimulate root growth due to their hormone-like compounds. Besides, it increases the microbial population in the soil, especially fungi. It also complexes nutrients and facilitates their absorption by plant roots. Humic acid can be used to accelerate seed germination and improve rhizome growth. These substances enhance oxygen transport in plants, accelerate respiration, and increase nutrient absorption by the plant. Furthermore, they contribute to increased chlorophyll content and green color, growth, improved budding, flowering, and better yield, making the plant more resistant to environmental stresses.

Consumption method and dosage

Cultivation type	Consumption method	Consumption dosage	Consumption time
Field	Soil application	5-10	The first season and over growth season
Orchard	Soil application	5-20	First season and over growth season
Greenhouse	Soil application	5-10	First season and over growth season
Vegetable and agronomic products	Soil application	2.5-5	First season and over growth season



With Biogano, no field is alone...

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