LIFEWATER SCIENCES

ProLife™ Plant Vitalizer

is beneficial for agricultural applications including enhancing growth patterns, yielding immediate soil quality improvement, freshness while enhancing overall taste and quality.

⊕ ProLife Plant Vitalizer has been tested and verified in Japan

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Chitosan PRO™

Pro life™
Plant Vitalizer

Product for Plant and Soil "Activation"

Made from highly-purified D-glucosamine and
N-acetyl-D-glucosamine fibrous material extracted from sea shells
CAS Number is 9012-76-4 and ChemSpider is 64870

ProLife Plant Vitalizer™ *Benefits**

- ⊕ For pesticide-free production
- ⊕ For ensuring hygienically safe and activated plant soils
- ⊕ For ensuring hygienically safe and flavorful vegetables
- ⊕ For enhancing flower sensory qualities (visual beauty and smell)

*Experience additional benefits when using ProLife Plant Vitalizer with LifeWater Sciences ceramic ore technology.

ProLife Plant Vitalizer™ *Effects**

- ProLife Plant Vitalizer is capable of safely enhancing product growth without loss of crop health and taste.
- ProLife Plant Vitalizer increases yield of agricultural crops providing added value by spraying on leaves or irrigation of soils.
- ProLife Plant Vitalizer promotes microbe growth resulting in soil and crop cultivation improvement.
- ProLife Plant Vitalizer is produced using natural un-harmful ingredients with no side effects to crops or humans.

ProLife Plant Vitalizer™ *Patented Product**

ProLife Plant Vitalizer is made by a unique manufacturing process using sea shells and is patented under Japan patent laws (Patent No. 4178361).

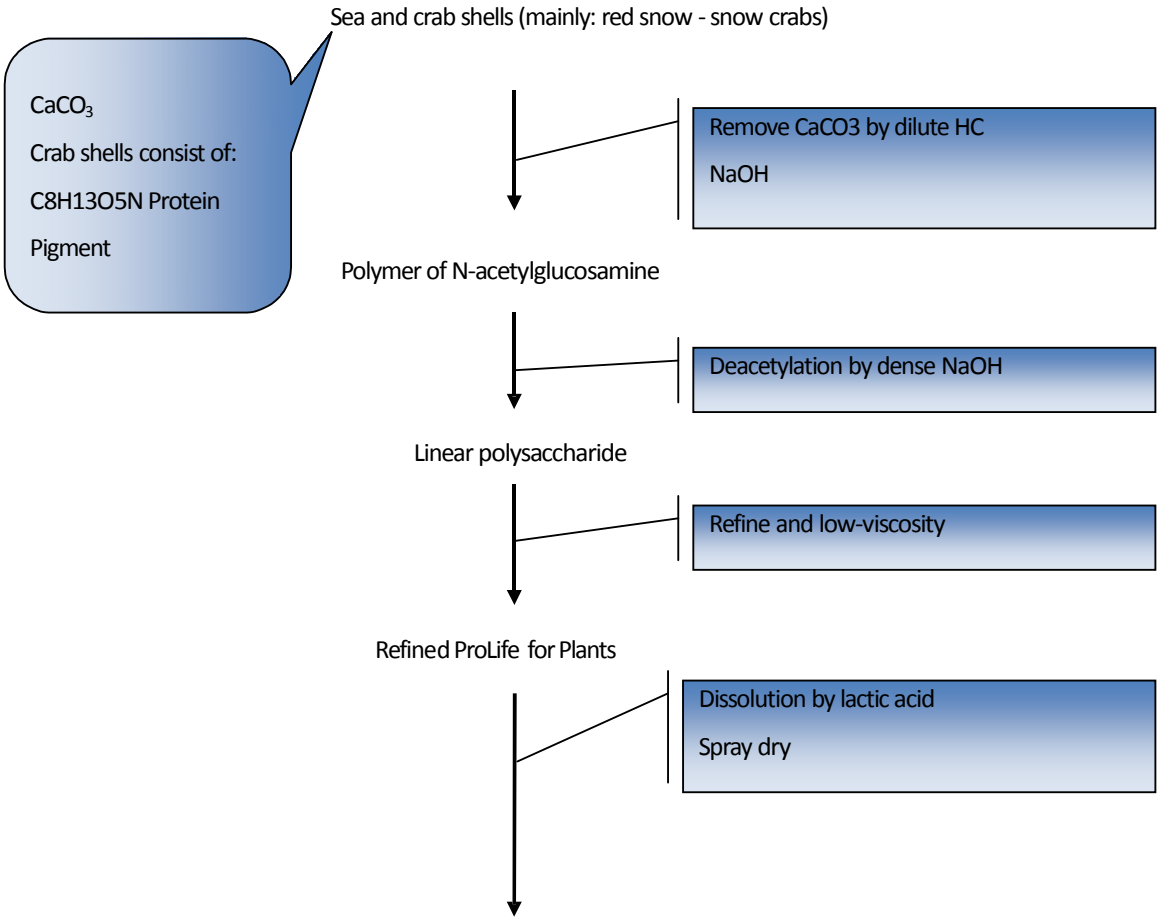
ProLife Plant Vitalizer through research and field testing has proven to be beneficial to the agricultural industry due to its effectiveness in enhancing plant growth, immediate soil quality improvement, seed face coating, increasing defense mechanisms (bacteriostatic and antibacterial) and enhancing freshness.

ProLife Plant Vitalizer™ *Ingredients**

- ProLife Plant Vitalizer is a 100% water soluble concentrated chitosan using proprietarily treated sea shells, which come from the "skin" covering of crustaceans.

The following describes the process of producing ProLife Plant Vitalizer:

1. N-acetylglucosamine is extracted from crab shells discharged in the crab meat packing plants in Sakaiminato/Totori, Japan and make it into a linear polysaccharide composed of randomly distributed β-(1-4)-linked D-glucosamine (deacetylated unit) and N-acetyl-D-glucosamine (acetylated unit).
2. The long-chain polymer of N-acetylglucosamine is further refined into a polished, low-viscosity solubilized powder through a unique technology developed by the Chitosan team in Japan.



Beans

Soybean		
How to use		**Dilution rate**
For soils before planting seeds	Spray on the soils around one week before the seeds planting (not on a rainy day)	5,000 times
At the time of planting seeds	Spray immediately after the seeds planting	5,000 times
At the time of budding	Spray on the leaves once every week	5,000 times
At the time of blooming	Spray on the leaves once every week	5,000 times
At the time of ripening	Spray on the leaves once every week	5,000 times
For disease control (from time to time)	Crown rot (spray twice in one week) Grey fungus	5,000 times
Expected effect	Enhancement of growth Improvement of quality High yield Prevention of disease	

Corn

Corn		
How to use		**Dilution rate**
For soil before planting seed	Spray on the soils around one week before seed planting (except on rainy days)	5,000 times
At seed planting time	Spray immediately after seed planting	5,000 times
At budding time	Spray on the leaves once every week	5,000 times
At ear emergence time	Spray on the leaves once every week	5,000 times
At ripening time	Spray on the leaves once every week	5,000 times
For disease control (from time to time)	Mosaic (spray twice in one week)	5,000 times
Expected effect	Enhancement of growth Improvement of quality High yield Prevention of disease	

Root vegetables

Radish, Carrot, Rutabaga, Sweet Potato, Shallot		
How to use		**Dilution rate**
Spray on leaves	Once every week	5,000 times
Spray on soils	Once every 10 to 15 days 1 to 2L per m^2	5,000 times
For disease control (from time to time)	Mosaic disease (spray twice in one week)	5,000 times
Expected effect	Enhancement of growth Enlargement High yield Prevention of disease	

Leaf vegetable

Beefsteak plant, Spinach, Spring Onion, Garland, Chrysanthemum, Lettuce, Cabbage		
How to use		**Dilution rate**
Spray on the leaves	Once every two weeks	5,000 times
Spray on the soils	Once every 10 to 15 days 1 to 2L per m^2	5,000 times
For disease control (from time to time) (spray twice in one week)	Mosaic disease Grey fungus Crown rot Soft rot Root knot	5,000 times
Expected effect	Enhancement of growth Improvement of quality High yield Prevention of disease	

- ⊕ Spinach

  It was found from an experiment that 2cm of spinach with diluted solution of 5000 times grew to 7cm in length and three time as big in diameter of its stem compared with the spinach in control.

  Similarly, the leaves had the same effect and grew much larger with greener color.

Greens and Fruits

Cucumber , Eggplant, Tomato, Green Pepper, Bean, Kidney Bean, Asparagus		
How to use		**Dilution rate**
Spray on the leaves	Once every week	5,000 times
Spray on the soils	Once every 10 to 15 days 1 to 2L per m^2	5,000 times
For disease control (from time to time) (spray twice in one week)	bacterial wilt disease Crown rot Grey fungus	5,000 times
Expected effect	Enhancement of growth Improvement of quality High yield Prevention of disease	

Fruits

Strawberry, Melon, Water Melon			
How to use		**Dilution rate**	
Spray on the leaves	Once every week	5,000 times	
Spray on the soils	Once every fifteen days 1 to 2L per m^2	5,000 times	
For disease control (from time to time) (spray twice in one week)	Anthranose Grey fungus Pink root	Spray on the leaves	5,000 times
		Spray on the soils	5,000 times
Expected effect	Higher sugar content Improvement of quality High yield Prevention of disease		

ProLife™ Plant Vitalizer

Citrus fruit

Orange		
How to use		**Dilution rate**
Spray on the roots	Once every week	5,000 times
Overall spray	Once a month Three times in the month before the harvest Once the day before the harvest (only on a sunny day)	5,000 times
	Once at the time of being blossoming Once at the time of being fruition Once a week after the fruition	
For disease control (from time to time) (spray twice in one week)	Citrus Melanose Tick Aphid	5000 times Spray every ten days
Expected effect	Higher sugar content Improvement of quality High yield Prevention of disease	

Flowers

Orchid, Chrysanth, Freesia, Rose		
How to use		**Dilution rate**
Spray on the leaves	Once every week	5,000 times
Spray on the roots	Once every week 0.5 to 1 L per $1m^2$	5,000 times
For disease control (from time to time) (spray twice in one week)	Grey fungus White mildew Soft rot Melanose	5,000 times
Expected effect	Strengthening of the roots Enrichment of color Prevention of disease	

Rice plants

Rice		
How to use		**Dilution rate**
At the time of raising seeds	Twice (once a week)	5,000 times
At the time of planting	Once	5,000 times
At the time of antisepsis	From time to time Spray on the leaves three to five times	5,000 times
For disease control (from time to time) (spray twice in one week)	Rice blast	5000times
Expected effect	Enhancement of budding Improvement of quality High yield (10 to 20 %) Prevention of disease	

Lawn (Golf course)

Bent Green, Korai Green, Fairway		
How to use		**Dilution rate**
At the time of cultivation	Once a week (summer) Once a fifteen days 1L per m^2	5,000 times
For disease control (from time to time) (spray twice in one week)	Mold Turn to red color	5,000 times
Expected effect	Strengthening of the roots Maintaining of good conditions Prevention of disease	

For the plants with some unusual conditions like disease or with insects,

the liquid is recommended to be used by dilution of 3,000 to 4,000 times.

How ProLife Plant Vitalizer differs from other chitosan products ?

- Our Chitosan is the first chitosan in the world which can be perfectly water soluble. Chitosan is usually not water soluble and there are little chitosan products which can be 100% water-soluble.

- It is very low-molecule so that it can be absorbed into human or animal body and the plants very easily. Chitosan is usually high-molecule so it is rather difficult for it to go into human or animal body or the plants.

- Concentration of our Chitosan can be changed so easily that it can create different type of products for each application. This means that our chitosan has much more possibility of having different applications commercially.

- Our Chitosan is 100 % made from shrimps and crab shells caught in South-Western of the Japan Sea and it is made in a first-class factory located in Kyushu (100% Made in Japan). It is widely known that chitosan does not harm people, pets, wildlife, or the environment when used according to label directions and our Chitosan can be said to be perfectly safe for human and other livings in the world.

Because of uniqueness of our Chitosan being very low-molecule, it can be easily and smoothly be absorbed inside the plants so it will give much more positive effect than other chitosan products. Also, it is very handy in making solution in the proper dilution because our Chitosan is 100% water soluble.

It is also confirmed that our Chitosan will create very fertile soils by giving active ingredients, i.e. chitin back to the soils and in effect increasing actinomycete in the soils.

In agriculture, chitosan is used primarily as a natural seed treatment and plant growth enhancer, and as an ecologically friendly biopesticide substance that boosts the innate ability of plants to defend themselves against fungal infections. Degraded molecules of chitin/chitosan exist in soil and water.

Agricultural applications of chitosan can reduce environmental stress due to drought and soil deficiencies, strengthen seed vitality, improve stand quality, increase yields, and reduce fruit decay of vegetables, fruits and citrus crops. Horticultural applications of chitosan increases blooms and extends the life of cut flowers.

It should be pointed out further that Chitosan applications to protect plants have been used in space as well. NASA first flew a chitosan experiment to protect adzuki beans grown aboard the space shuttle and Mir space station in 1997. NASA results revealed chitosan induces increased growth (biomass) and pathogen resistance due to elevated levels of beta 1-3 glucanase enzymes within plant cells. NASA confirmed chitosan elicits the same effect in plants on earth.

Difference between chitosan and fertilizers or pesticides

The natural biocontrol ability of chitosan should not be confused with the effects of fertilizers or pesticides upon plants or the environment. Chitosan active biopesticides represent a new tier of cost effective biological control of crops for agriculture and horticulture. The biocontrol mode of action of chitosan elicits natural innate defense responses within plant to resist insects, pathogens, and soil-borne diseases when applied to foliage or the soil. Chitosan increases photosynthesis, promotes and enhances plant growth, stimulates nutrient uptake, increases germination and sprouting, and boosts plant vigor. When used as seed treatment or seed coating on cotton, corn, seed potatoes, soybeans, sugar beets, tomatoes, wheat and many other seeds, it elicits an innate immunity response in developing roots which destroys parasitic cyst nematodes without harming beneficial nematodes and organisms.

"EPA and USDA "

Chitosan applications for plants and crops are regulated by the EPA, and the USDA National Organic Program regulates its use on organic certified farms and crops

ProLife™ Plant Vitalizer

Chitosan PRO™