





### What is Proenzyme

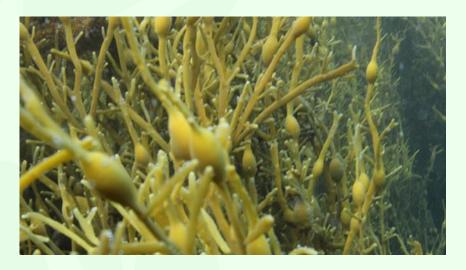
- Proenzyme is derived from a sea weed, Ascophyllum nodosum (a marine algae), Humic Acid & Amino Acid
- Marine Algae is an ideal organic store house of naturally occurring plant growth nutrients and other related compounds.
- Humic acid: is a group of molecules that bind to, and help plant roots receive, water and nutrients. High humic acid levels can dramatically increase yields. Humic acid deficiency can prevent farmers and gardeners from growing crops with optimum nutrition.
- Amino Acid : Glycine and Glutamic Acid are fundamental metabolites in the process of formation of vegetable tissue and chlorophyll synthesis. These Amino Acids help to increase chlorophyll concentration in the plant leading to higher degree of photosynthesis. This makes crops lush Green.





# What is Seaweeds (Ascophyllum nodosum)

- Ascophyllum nodosum is a large, common cold water seaweed or brown alga in the family Fucaceae, being the only species in the genus Ascophyllum.
- It is a seaweed that only grows in the northern Atlantic Ocean,







### Sea weeds An effective Bio-Stimulants

- The global amount of cultivable land available for agriculture is continuously shrinking due to urbanization and the adverse effects of climate change.
- In order to meet the ever-increasing demands of the growing human population, world food production must double by the year 2050
- To address the pressures associated with increasing agricultural productivity to subsequently meet the rising demands for food, producers have turned to excessive applications of synthetic (chemical) fertilizers and pesticides.
- These harmful chemicals pose both short- and long-term threats to the health of the entire biosphere
- Therefore, an effective, biological-based alternative is required in order to reduce dependency on synthetic fertilizers and pesticides.
- Plant bio-stimulants are a new class of crop input, offering a potential alternative to traditional, agro-chemical inputs, and, in most cases, can reduce the application rates of synthetic fertilizers and pesticides by enhancing their efficacy





## Nutritional Value of Proenzyme for Proenzyme has six major components:

- Cytokinin
- Auxin
- Gibberellins
- Enzymes •
- Betaines •
- Hydrolysed protein complex

#### Natural advantages of sea weed:

- Organic in nature
- Over 60 minerals and elements
- 21 amino acids ٠
- Simple and complex carbohydrates ٠
- Essential plant growth nutrients & hormones
- Trace elements







#### **CYTOKININS**

- Promote cell division
- Regulate root growth
- Control biosynthesis of other hormones thus induce flower initiation, fruit setting and maturation of seeds.
- Retard senescence in aging leaf tissues.
- Helps in synthesizing enzymes & structural proteins.







#### AUXINS

- Promote cell elongation.
- Increase chlorophyll content and stimulate photosynthesis and respiration.
- Help in root initiation and development
- Control abscission.
- Delays aging of plant tissues.
- Ensures continues flow of carbohydrate for developing fruit and wood formation.

#### GIBBERELLINS

- Stimulate cell division
- Larger root system







#### HYDROLYSED PROTEIN COMPLEXES

• Contains peptides and free amino acids and help in cell growth.

#### **BETAINES**

- Reduces the intensity of oxidation reactions that damages cell structure.
- Limits the stress on the plant, enhances crop growth and improves overall health of the plant.







#### **ENZYMES**

- Activate and catalyze biochemical reactions of a cell.
- Help in break down of complex molecules into simpler ones which can easily be utilized by the plant.
- Enhances the plant metabolic activities.
- Improves uptake of complex molecules from soil ,Improves soil microbial activity.
- Induces faster and vigorous development of root mass.
- Improves uptake of previously unavailable nutrients and water from soil.
- Deep root growth also ensure that plants are able to cope with environmental stress.

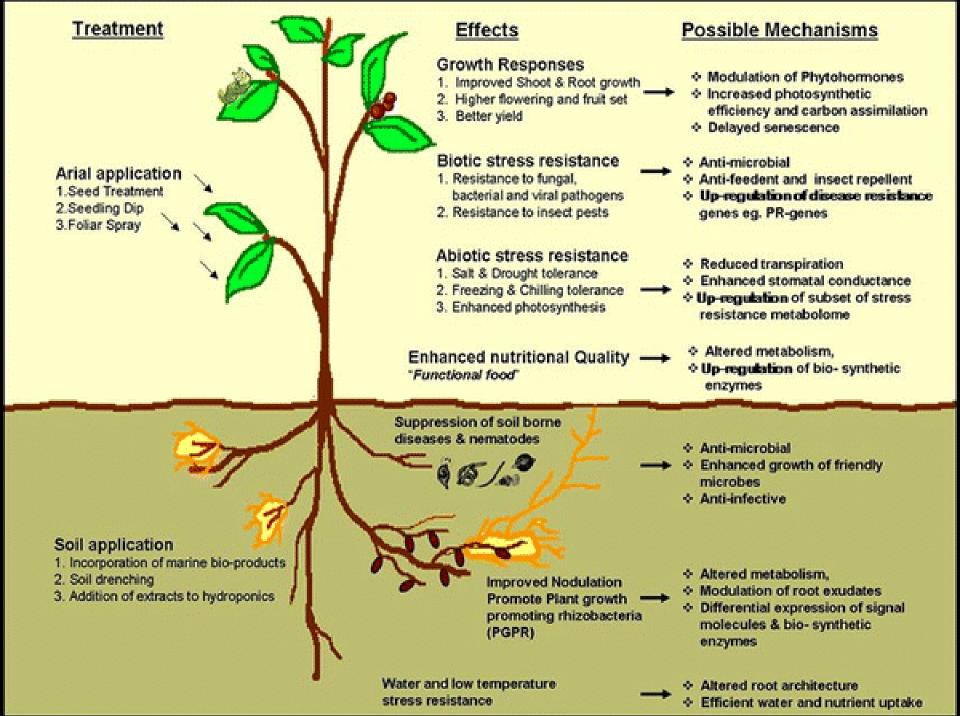






- How is Proenzyme taken up by plants?
- When applied Proenzyme is absorbed in the vascular system of plants through stomatal openings besides the lenticels and cuticular fissures.
- It has the ability to bypass the physiological barriers and thus enters the plants.









### Humic acid

- Increased Nutrient Uptake
- Decreased Toxins
- Increased Water Retention
- Improved Microbial Growth
- Better Overall Soil Structure







### **Amino Acid for Plant**

- Amino acids can play different roles in plants, such as stress-reducing agents, nitrogen source and hormone precursors
- Another important fact is the role of **amino acids** as a signalling factor of different physiological processes in **plants**.







### **Benefits of Proenzyme**

- Improve plants natural self defense system, which results in healthier
- Crop with low pest pressure. Tolerance to stress conditions.
- Profuse branching/ tillering and increased foliage
- Profuse flowering and fruiting.
- Better development of grains/fruits (in size & weight)
- Better shelf life of produce, Reduced flower & fruit drop.
- Compatible with other products.
- Improves yield and quality.







### **Proenzyme Application**

#### **Foliar Application**

Spray with any high volume sprayer, such as, knapsack sprayer till the Leaves are drenched completely.

For maximum advantage use at all critical phases of plant growth (early crop stage like seedling/immediately after transplant, pre-reproductive stage or flowering stage/peak flowering/fruit setting and fruit development stage)

#### Dosage

- •Diluted at the rate of 1 ml in 1 lit of water .
- •Generally applied at the rate of 200ml per acre.
- •Shake bottle thoroughly before using
- •Spray during cool hours in the morning or evening
- Proenzyme is compatible withr most of the commonly used fertilizers, insecticides, acaricides ,fungicides , adjuvants/ surfactants except which are of highly alkaline nature. However, it should not be applied with growth retardants and herbicides.





### Where to use : Proenzyme

#### Field Crops :

Paddy, Wheat, Jowar, Bajra, Cotton, Cumin, Opium, Jute, Sugarcane, Maize etc.

#### **Pulses :**

Red gram, Green Gram, Black gram, Horse gram, Bengal gram, Chick pea, Cow pea, Soyabean etc.

#### **Vegetables :**

Chilies, Beans, Brinjal, Okra, Onion, Pea, Potato, Sweet potato, Tomato, Cabbage, Cauliflower, spinach, Carrot, Reddish etc.

#### **Plantations :**

Arcanut, Coconut, Coffee, Rubber, Tea, Mulberry, Cocoa etc.

#### **Horticultural Crops :**

Apple, Banana, Citrus, Guava, Mango, Peach, Apricot, Ber, Grapes, Cashew, Melons, Papaya, Plum, Pomegranate etc

#### **Oil Seeds:**

Ground Nut, Castor, Linseed, Mustard, Safflower, Seasamum, Sunflower.

Spices, Black pepper, Cardamom, Coriander, Cumin, Garlic, Ginger, Tobacco, Turmeric etc. **Others:** Lawns, Gardens, Golf course, Green house, floriculture, fodder crops etc.





### Proenzyme : Caution

- Not to be applied with products that are of highly alkaline nature.
- Not to be applied with growth retardants and herbicides.
- Store at room temperature and avoid exposure to direct sun light.
- Keep the bottle tightly closed when not in use.
- Keep out of reach of children.







### Proenzyme Usages

Сгор	No. of sprays & stage/interval of application		
	3 sprays, at initiation of flowering and at 20 and 40		
Chilli & Tomato	days after first spray.		
Brinjal,Okra and Cucurbits	2 sprays, at 6-8 leaf stage and at the sign of fruit set.		
Cabbage, Cauliflower, Turnip, Radish and Carrot.	2 sprays, at 6-8 leaf stage and at 15 - 20 days after first spray.		
Soyabean, Pea, Cowpea, French bean and Cluster bean.	One Spray at 6-8 trifoliate leaf stage		
Onion & Garlic	One spray at 25-40 DAS		
Potato	One spray at 6-8 leaf stage		
Ginger & Turmeric	2 sprays, at 45-50 DAS and at 21 days after first spray.		





### Proenzyme Usages

Сгор	Number of sprays and stage/interval of application		
Grapes (April pruning)	3 sprays , at 5 weeks after pruning and at 5 and 10 weeks after first spray.		
Grapes (October pruning)	3 sprays, first spray before Ist GA application, second spray after fruit set and third spray at initiation of ripening.		
Mango (Young trees up to 5 Years)	Spray once in 2 months.		
Mango(bearing trees)	2 sprays, at first blossom and at fruit set stage.		
Pomegranate	2 sprays, at fruit-set and 50% of fruit development.		
Citrus	Spray once a month till harvest.		
Averala	3 sprays, at green tip stage, at fruit-set stage and 4 weeks		
Apple	before harvest.		
Plums and Peaches	One spray at early bloom stage		





### Proenzyme Usage

Сгор	Number of sprays and stage/interval of application		
Rose, Jasmine &	First spray at 30 days before bud formation and thereafter		
Chrysanthemum	at 15 days interval till the end of flowering.		
Теа	after pruning		
Coffee	Coffee: during flowering		
Торассо	First spray15 days after sowing and second spray can be given 20 days after transplanting		

DAS: Days After Sowing DAP: Days After Planting





### **Proenzyme : Price Information**

Product	Pack	MRP (RS.)	DP
Proenzyme	250 ml	375	310

