Luma Ingredients

INGREDIENT COLLECTION



PRODUCT BROCHURE

Chitooligosaccharides

Agricultural Grade

Quality ingredients.
Thoughtfully delivered.

www.lumaingredients.com

COS IN AGRICULTURE

A plant-response ingredient.

Low-molecular-weight COS is produced by biological enzymolysis of chitosan from shrimp and crab shells. It is used as a plant immune elicitor, a marine biopesticide and a natural biostimulant, supporting crop growth, development, nutrient regulation and resistance.



Plant response

Activates innate immunity, PR proteins and plant-protective compounds; supports disease resistance and antiviral response.

Soil ecology

Supports beneficial microorganisms, nutrient availability, aeration, and water and fertilizer retention; helps release fixed secondary and trace elements.

Crop development

Supports germination, roots, nutrient and water uptake, reproductive development and crop quality. Helps mitigate stress and nematodes.

High-molecular-weight chitin is insoluble in water, acids and alkalis and needs microbial breakdown in soil. Lower-molecular-weight COS supports foliar, soil, coating and irrigation routes.

50-100 ppm

Foliar concentration

2-5 g/mu

Application quantity

40%-80%

Reported general disease and pest control

10%-20%

Reported crop yield increase

Foliar profile: 7-day intervals; three consecutive applications give better results.

FOUR ROUTES TO THE CROP

Four application routes.



Seed treatment

100-150 ppm

Soak 12-24 h in 1-1.5 g / 10 kg water (100-150 ppm), depending on temperature. Alternatively, use 500 ppm (5 g / 10 kg water) for seed dressing or seed spraying.



Foliar spraying

3-5 g/mu

Use a manual or mechanical sprayer. Increase concentration for aerial application. Spray 2-3 times at 7-10-day intervals; apply 5-7 days before adverse weather such as low temperature or frost.



Irrigation application

20-30 g/mu

For root diseases including Fusarium wilt, bacterial wilt and root rot: apply COS raw powder after transplanting, before disease or at early onset. For severe disease, combine root irrigation and above-ground spraying focused on the crop base.



Postharvest preservation

100 ppm

Immerse harvested fruit and vegetables for 3-5 min at 1 g / 10 kg water. For preharvest spraying, use 50 ppm (0.5 g / 10 kg water). Film-forming and antimicrobial action reduce internal nutrient consumption.

General timing: key growth stages from seed to grain filling; 5-7 days before or after adverse weather, before disease or at early onset.

CROP-BY-CROP USE

Vegetables & cereals.

Rates are stated per mu, the Chinese land-area unit.



Vegetables

Tomato, cucumber, pepper, eggplant, Chinese cabbage, rapeseed, ginger, winter melon, cauliflower, green cucumber, yardlong bean, chives and strawberry.

SEED SOAKING

0.15 g/L

FOLIAR SPRAYING ALONE

3-5 g/mu

2 g in 10 kg water; apply at intervals of 7-10 days.

IRRIGATION APPLICATION ALONE

50-100 g/mu

Chinese chives: recommended 100 g/mu.

REPORTED EFFECTS

Increases plant height and leaf number; darker leaves, growth and low-temperature resistance. Greenhouse use shortens the growth cycle. Reported yield increase: approximately 10%-20%.



Cereals

Maize, rice, wheat, soybean and peanut.

SEED SOAKING

2-4 g/L

FOLIAR SPRAYING ALONE

3-5 g/mu

Spray continuously at 1-month intervals.

IRRIGATION APPLICATION ALONE

20-40 g/mu

REPORTED EFFECTS

Can reduce chemical pesticide use, promote rice seedling growth and improve cold tolerance in rice plants. Reported yield increase: approximately 10%.

CROP-BY-CROP USE

Cash crops & fruit.

Rates are stated per mu, the Chinese land-area unit.



Cash crops

Cotton, tobacco, notoginseng, tulip and pepper.

SEED SOAKING

Not specified

FOLIAR SPRAYING ALONE

3-5 g/mu

Spray continuously at 10-day intervals.

IRRIGATION APPLICATION ALONE

50 g/mu

~8%

REPORTED YIELD INCREASE

Inhibits tobacco viral and mosaic disease; supports cotton growth and yield.



Fruit

Apple, pear, passion fruit, dragon fruit, papaya, watermelon, melon, banana and durian.

SEED SOAKING

Not specified

FOLIAR SPRAYING ALONE

3-5 g/mu

Spray continuously at 10-day intervals.

IRRIGATION APPLICATION ALONE

50 g/mu

~15% per plant

REPORTED YIELD INCREASE

Promotes flowering, fruit retention, enlargement, color, rooting and soil improvement. Prevents flowering-stage frost injury; strengthens vigor, disease resistance and growth, reduces fruit drop and improves taste.

QUICK-REFERENCE PROFILE

A practical field guide.

<30 min	24-36 h	7-9 days+
Onset	Visible effect	Persistence

Seed treatment

100 ppm; soak for 12-24 h, depending on temperature. Alternatively, 500 ppm for seed dressing.

Foliar spraying

50-100 ppm with a manual or mechanical sprayer. Increase concentration for aerial application.

Ground irrigation

15-25 g of COS technical material per mu.

Application discipline

- Mix with compatible fungicides, foliar fertilizers and insecticides; avoid alkaline products.
- Repeat spraying if rain occurs within 6 hours.
- Keep the stated dilution. Shake any sediment before use; sediment does not affect performance.
- Alternate with relevant disease-control products. Maximum 3 applications per growing season.
- Spray before 10 a.m. or after 4 p.m.; avoid strong sunlight.
- Begin at the seedling stage for better disease prevention.

Timing & safety

Apply at key growth stages and before or at early stress, including more than 1 day before freezing, drought, waterlogging or disease occurs.

Overuse profile

Excess use may temporarily slow crop growth. Recovery occurs within a few days, without yield reduction or irreversible injury.

Apple testing reported that 5-10 times the normal quantity remained safe for crops.

FIVE BIOLOGICAL MECHANISMS

Five routes to cold resilience.



ANTIOXIDANT ENZYMES

01

Proline & soluble sugars

COS increases proline and soluble sugar content. These lower the freezing point of intracellular water, reducing ice-crystal damage to organelles and allowing plants to tolerate lower temperatures.

02

Cell-membrane stability

COS inhibits membrane-lipid peroxidation and reduces malondialdehyde (MDA) formation and accumulation. This protects intracellular proteins, nucleic acids and cell structure from low-temperature injury.

03

Antioxidant enzymes

COS promotes superoxide dismutase (SOD), peroxidase (POD) and catalase (CAT). Greater enzyme production and activity remove oxidants, protecting cell structure and reducing cold injury.

04

Chlorophyll & energy

COS promotes chlorophyll synthesis, improves photosynthetic function and helps maintain the energy supply needed for plant growth and survival at low temperatures.

05

Root development

COS induces auxins such as indole-3-acetic acid and gibberellins. Seed treatment promotes early germination and more, longer fine roots; stronger later root systems improve fertilizer and water use, cold and drought resistance, and yield.

AGRICULTURAL-GRADE COS

Specifications & contact.



PRODUCT PROFILE

Test item	Standard specification
Appearance	Yellow-brown powder
Molecular weight (Da)	≤3,000
COS content (%)	≥85
Moisture (%)	≤10.0
Ash (%)	≤2.0
Water-insoluble matter (%)	≤1.0
pH	5.0-7.0
Arsenic (ppm)	≤0.5

Discuss your application.

Ask for current product specifications and batch documentation for the grade under evaluation.

LET'S CONNECT

Luma Ingredients

WHATSAPP BUSINESS

Scan to start a conversation.

+86 188 8821 7510

cman@lumaingredients.com

www.lumaingredients.com

Dezhou, Shandong, China