



**Goes where roots can't.**

**EndoPrime®** from Sumitomo Chemical is a plant and soil enhancement product that contains mycorrhizae. Mycorrhizae are beneficial fungi that naturally exist in soils colonising the root systems of plants. EndoPrime includes 4 high performing endo-mycorrhizae species that have been proven to increase crop productivity and overall plant and soil health.

**KEY AREAS ENDOPRIME HAS BEEN SHOWN TO IMPACT:**

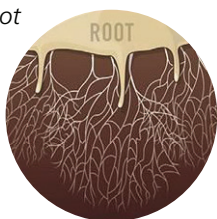
- Crop yield
- Root and shoot biomass
- N, P, K and some trace mineral uptake
- Water uptake during moisture stress
- Displace pathogenic organisms
- Plant performance in variable soil environments
- Soil health

## Mycorrhizae increase root surface area up to 100X

As roots begin to grow in the soil, mycorrhizae quickly colonize and produce long, fine structures called hyphae. The hyphae are what expand the root system and are able to go beyond what the bigger roots can access. Mycorrhizae can increase the surface area in excess of 100x that of a plant's own natural root system.

### ROOT MASS EXPANSION

*Hyphae attach to root hairs and access areas inaccessible to big roots.*

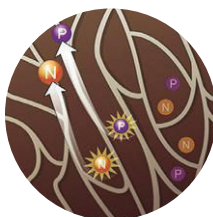


## Increased nutrient uptake

In addition to increasing the surface absorbing area of roots, Mycorrhizal fungi also release powerful chemicals that dissolve hard to capture nutrients such as phosphorous, iron and other "tightly bound" soil nutrients. Mycorrhizal fungi form an intricate web capturing and assimilating nutrients, thus conserving the nutrient capital in soils. In soils with limited or no mycorrhizae much of these valuable nutrients are lost from the system.

### NUTRIENT ACCESS AND UPTAKE

*Hyphae can access small soil spaces that root hairs can't. They also produce enzymes to release nutrients that are tied up in the soil.*



## Improved water uptake and drought stress

The same extensive network of fungal filaments important to nutrient uptake is also important in water uptake and storage. In rain fed cropping systems plants treated with mycorrhizae often exhibit far less drought stress compared to non-treated plants and in irrigated systems applied water is more efficiently utilised.

### DROUGHT TOLERANCE

*Vesicles are created, storing resources until needed by the plant.*



## Displace pathogenic organisms

Mycorrhizae fungi can displace disease pathogens trying to enter the root zone. Roots well colonised by Mycorrhizae have a tight, interwoven sock like covering of dense filaments that can act as a physical barrier reducing invasion by certain diseases.

## Improved soil structure

Mycorrhizal fungi can also improve soil structure. Mycorrhizal filaments produce humic compounds and organic 'glues' (extracellular polysaccharides) that bind soils into aggregates and improve soil porosity. Soil porosity and soil structure positively influence the growth of plants by promoting aeration, water movement into soil, root growth, and distribution.

## Superior in-vitro formulation

EndoPrime is produced through a proprietary In-Vitro process where the end product is highly uniform and with less impurities than traditional In-Vivo production. Aside from being a highly uniform, highly concentrated formulation, EndoPrime has no 'non-soluble substrates' that can block sub-surface drip irrigation systems (a common issue with In-Vivo produced products).

## Application

EndoPrime can be applied in-furrow at planting, as a seed treatment, a seedling drench or via sub-surface irrigation. Regardless of application method a target rate of **100-150 g/ha** should be applied to most crops. EndoPrime is a wettable powder (WP) that can conveniently be mixed with many other products including adjuvants, biologicals, fungicides, insecticides and liquid fertilisers. Refer to product label or contact your local Sumitomo representative for more detailed information.

## Crop relationship with mycorrhizae

Highly beneficial	Beneficial	No beneficial relationship
Solanaceous crops (tomato/capsicum)	Cotton	Beet
Legume vegetables	Rice	Carnation
Tuber and root crops (carrot/potato)	Wheat/Barley	Spinach
Onion	Corn	Canola
Citrus	Banana	Cabbage
Cucurbits	Sugarcane	Mustard
Garlic	Field legume crops Sorghum	

*\* Over 80% of the world plant species form a mutually beneficial bond with Mycorrhizae*

## Features and benefits

Features	Benefits
Aids nutrient scavenging	Improved yield and potential fertiliser savings
Better utilisation of soil water	Improved drought tolerance, yield and improved use of irrigation
4 high performing endo-mycorrhizae strains	Confidence symbiotic relationship will be maximised across a range of conditions
High quality In-Vitro WP (Wettable Powder) formulation	Easy to use and confidence drip irrigation systems will not experience blockages

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