



RELEASE & CATCH TECHNOLOGY

DEFEAT DROUGHT

CataPult SUPERFINE

CataPult SUPERFINE is a high-grade inoculum to assist crops tolerate low water availability such as end of season irrigation restrictions or dryland production systems.

CataPult contains four species of mycorrhizae (VAM) plus *Bacillus spp.* in a SUPERFINE formulation that allows application via fertigation or drip irrigation.

CataPult helps fruit, nut and vine crops tolerate drought stress. With changing rainfall and snow falls the availability of irrigation water becomes limiting in most seasons. Tree and vine crops generally suffer some degree of water stress late in the season. CataPult assists crops to get through that end of season stress. Decreasing the end of season water stress can allow late season fruit to mature properly.

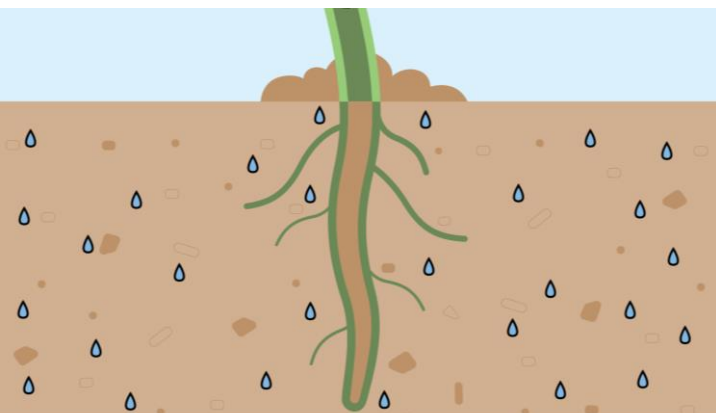
CataPult helps crops tolerate some degree of salinity.

CataPult also allows the tree and vine crops to complete very important end of season preparations for the following season. These include nutrient replenishment after fruiting and new root growth to service the crop at the start of the next season. Water stress at the end of the season prevents these important processes occurring which reduces yields in the current season as well as affecting growth early in the following season.

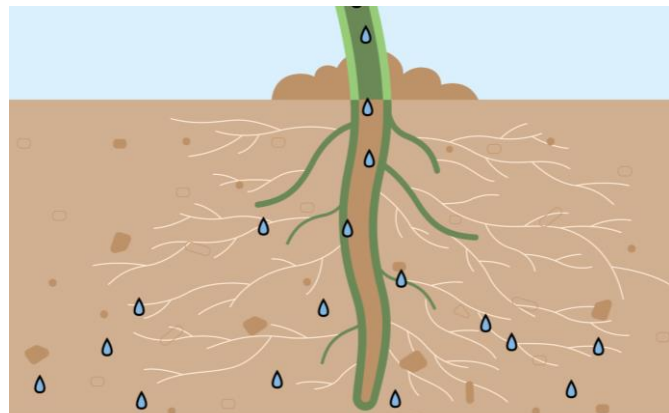
HOW DOES CATAPULT PROVIDE DROUGHT TOLERANCE?

CataPult works to provide drought tolerance by two main classes of action.

1. The first mechanism is to increase water gathering capacity for the plant. The mycorrhizae spores in CataPult germinate and colonise into the roots. Then they send out a very extensive network of fine filaments called hyphae. These take up nutrients and water very efficiently from the soil that is not in direct contact with the roots and root hairs. They also extend far outside the normal range of roots to gather water that has moved away from the root zone. This means the tree and vine crops (and broadacre crops) capture irrigation water before it is lost to evaporation or to movement of water out of the root zone



Without CataPult a lot of water is available but not collected by the roots



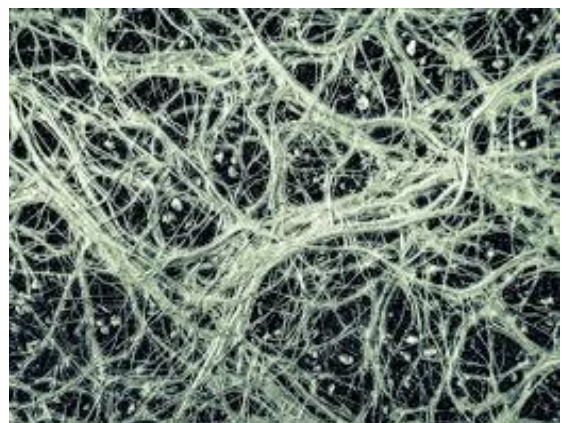
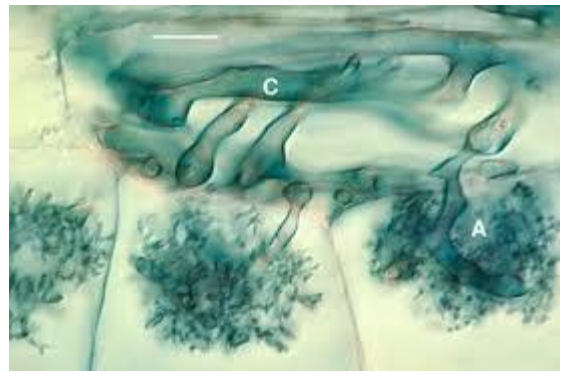
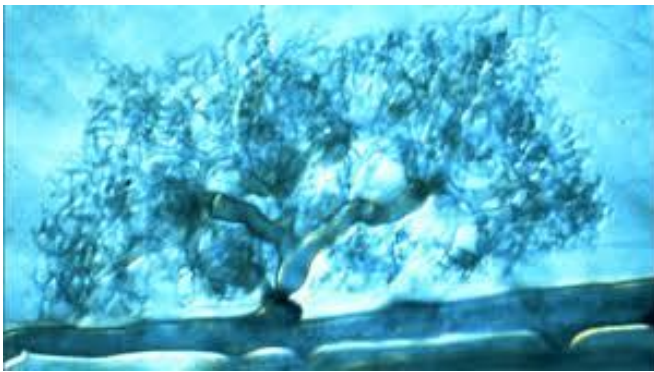
With CataPult the huge extensive hyphae collect water very efficiently

2. The second mechanism that CataPult mycorrhizae inoculum uses to help tree and vine crops grow with reduced availability of irrigation water is to switch them into drought tolerance mode. A series of metabolic signalling paths are switched on in the plants by the mycorrhizae. These include aquaporins, abscisic acid (ABA) and other key water status switches. The effect of these switches is to make the plants able to grow well with less water.

So the first mechanism captures the irrigation water much more effectively and the second mechanism switches on metabolic pathways that allow the tree and vine crops to use a smaller amount of water to keep growing strongly. Growers in many areas are facing increasing water shortages and CataPult provides part of the solution to those challenges.

Both mycorrhizae and Bacillus microbes have been shown to confer some capacity to tolerate a degree of salinity in water and soil. For crops affected by mild salinity this is of value.

CataPult SuperFine can be applied through fertigation and drip irrigation systems and is usually applied once per season in tree and vine crops.



These images show the hyphae that are produced by mycorrhizae to extend out of the roots where they gather water and nutrients from the soil and transport them back into the crop plants

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