

Carbohydrate and Surfactant Treatments

Recently published research in the application of carbohydrates (sucrose) in root drenches has shown considerable promise in improving general plant health whilst limiting the effects of environmental stresses and even herbicide damage. Peer reviewed and published research on field trials conducted on containerised plants, young transplanted and established mature trees demonstrated that carbohydrate treatments applied at specific rates resulted in a decrease in time taken for the initiation of new roots, an increase in the number of roots initiated and improved root elongation rates.

More traditional forms of soil improvement treatments generally contain macro and micronutrients and encourage beneficial microbial activity which in turn helps release nutrients in the soil for plant uptake. These assimilates are then transported to the crown of the plant and used in the photosynthetic process to generate carbohydrates required for root growth. By providing sucrose at specific rates in and around the root zone of the plant, the carbohydrates required for root growth are immediately available thus limiting the plants reliance on the crown to provide these assimilates. This can be particularly useful in circumstances where the plants crown may have decreased foliage levels, small and/or chlorotic leaves and which may not have the capacity to produce sufficient carbohydrates for root growth.

Carbohydrates are also known to stimulate beneficial soil microbial and fungal rhizosphere that assist in plant nutrient uptake. In addition, the use of surfactants in carbohydrate drenches can improve irrigation performance and reduce water requirements. Surfactants aid in the wetting and movement of water in media and landscape soils. These are biodegradable detergent-like products that work by lowering the surface tension of water so that wetting is uniform and effective. If media wetting is not uniform, irrigation water tends to move through the larger pores in the media where it is subject to downward gravitational forces. This in turn leads to increase leaching and reduced irrigation efficiency. By improving penetration, wetting, and water movement, media surfactants can increase the effective wetting area thereby increasing irrigation efficiency.

Carbohydrate and surfactant drenches are applied through soil injection techniques that deliver the material at a depth of approximately 150 - 200mm. This is done to reduce the loss of material through natural evaporation and to better target the root system of the subject plant. Treatments shallower than this could result in other plants (particularly turf) drawing up the sucrose before the target plant has a chance to absorb it.

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