



# Handling and Performance Guide

NORTH AMERICA | LANDSPRING

# Stress protection for seedlings

LandSpring™ technology is a plant-growth regulator (PGR) for pre-transplant use on seedlings to help them withstand transplanting and other stresses encountered in the field. The benefits typically observed in treated seedlings include better seedling survival and establishment, more vigorous early growth and development and a crop that is better able to resist stress-causing pathogens. All these benefits contribute to a healthier crop and higher yield.

## Overview and Mode of Action

LandSpring technology is a PGR that binds to ethylene receptors to make seedlings less sensitive to stresses such as heat, cold, UV radiation, drought, flooding and salinity that often occur after planting. When applied 1-5 days before transplanting, LandSpring counteracts stress effects, resulting in greater root and shoot growth, less tissue die-back, earlier and increased flowering and fruit set and less disease susceptibility. Treatment results in a healthier, more vigorous crop that is better able to withstand adverse environmental conditions and give growers the best chance of maximum yield.



## Technology

The active ingredient 1-Methylcyclopropene (1-MCP) so closely resembles ethylene that it preferentially binds to ethylene receptors when applied ahead of a stress event. It thereby prevents the ethylene signals that would prompt a plant to reduce growth processes in response to stress. Unlike many other PGRs, LandSpring technology does not directly change the plant's metabolism. It simply blocks ethylene from reaching receptors and therefore reduces the plant's negative response to stress factors.

## Safety

LandSpring technology has a favorable safety profile and leaves no detectable residue. It has been tested on numerous plant varieties with no phytotoxic effects. It is a tool used to protect seedlings during their most vulnerable and important period of growth: crop establishment. It is effective at extremely low use rates and remains in the plant for only a short time.

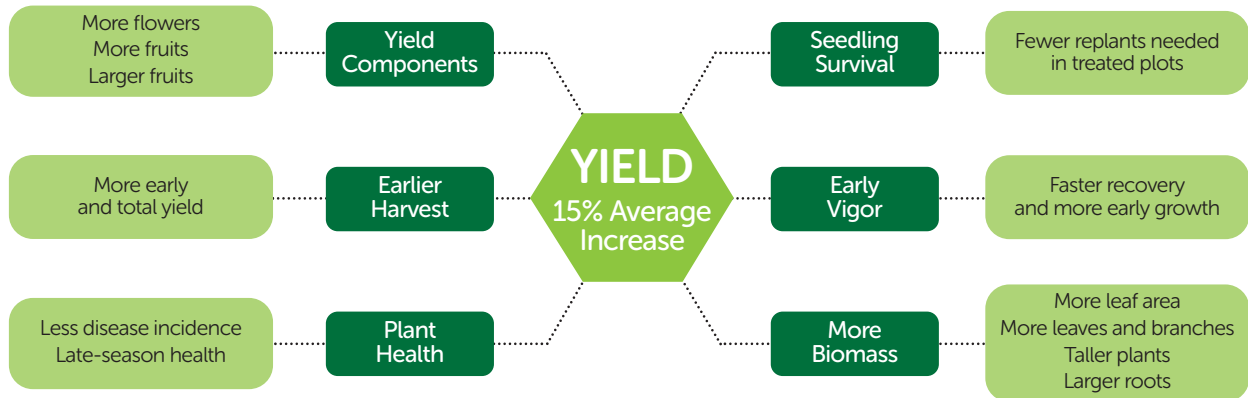


## LandSpring Technology Use Guidelines for Seedlings

- Spray plants with a minimum of 40 GPA and at droplet sizes > 250 microns
- Allow product to dry before irrigation (irrigation before application is permissible)
- Apply preferably at least 1 day before shipping plants to field for transplantation
- Follow normal transplanting, production and crop-protection practices
- Do not mix with products containing copper
- Before using this product, read the entire Precautionary Statements, Conditions of Sale and Warranty, Directions for Use, Use Restrictions and Storage and Disposal Instructions on the product label.

# Documented technical features and benefits:

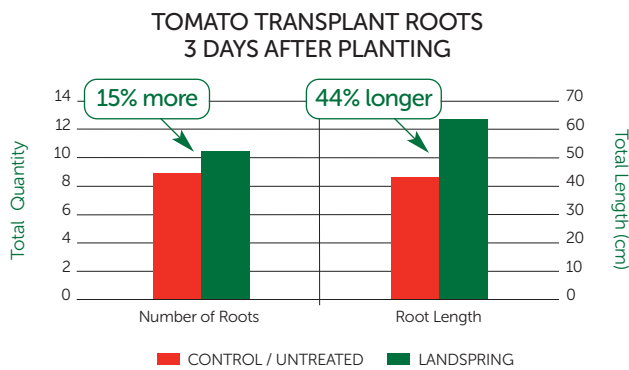
LandSpring™ technology benefits the crop all season long, leading to higher yield.\*



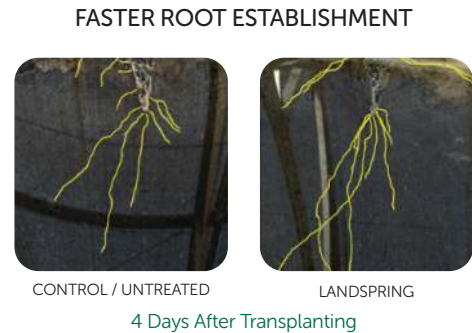
\*Beneficial yield effects observed 78% of the time compared to untreated crops.

## IMPROVED SEEDLING SURVIVAL

Faster root establishment, more leaf area and greater biomass.



Source: University of Florida Trial



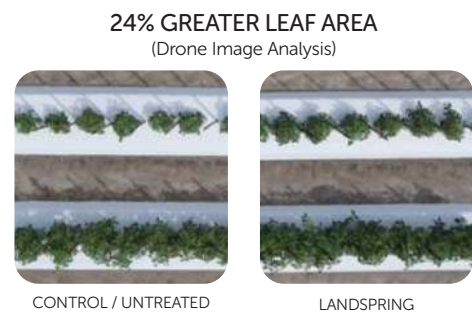
Source: University of Florida Trial

## VIGOROUS GROWTH

Early vigor after transplant leads to more leaf area.



Source: AgriTechnologies, 2015



Source: University of Florida Trial

## LESS DISEASE

Reduced fungal, viral and bacterial disease results in better late-season health.

### FUNGAL PATHOGEN (Pythium on Pepper)



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Less incidence of fungal pathogens

Source: AgriTechnologies, 2015

### BACTERIAL PATHOGEN (Bacterial Leaf Spot on Tomato)



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75 Days After Transplanting

Tests have shown LandSpring to improve bacterial disease tolerance

Source: University of Florida Trial

### VIRAL PATHOGEN (TYLCV on Tomato)



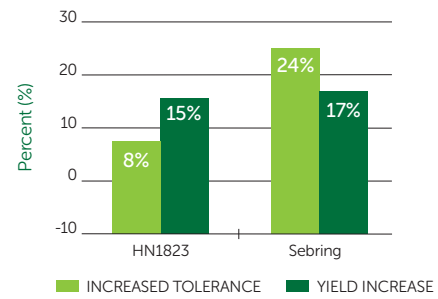
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LandSpring applied 3 days before transplanting showed a reduction in viral TYLCV infection from 20% to 3%, as well as an eventual yield increase of 18%

Source: University of Florida Trial

### INCREASED TOLERANCE TO BACTERIAL LEAF SPOT



Source: University of Florida Trial

## GREATER YIELD

Healthier and more vigorous plants contribute to the production of more flowers, more fruit and higher yield.



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