



ag management strategies

A close-up photograph of a green leaf with a single water droplet hanging from its tip. The droplet is about to fall, creating concentric ripples on a light blue surface below. The background is a soft, out-of-focus blue and green.

Ag Management Strategies Year End Report 2015



Water Solutions for a Growing World!

Lee Rain Inc.
2015 Season



SOIL WATER HEALTH

Soil Water Health is a measurement that describes what kind of soil environment the plant, more specifically the roots, has to live in.

Successful agriculture depends on healthy soil. The oxygen and water ratios in the soil makes up how healthy the soil is. Since soil organisms respond sensitively to irrigation management and cultural practices, proper Soil Water Health has the capacity to improve the vital living system or ecosystem, which occurs below the soil surface, to sustain optimal plant productivity.

The Soil Water Health chart shows for the whole season what the Optimum, Oxygen Deficiency and Water Deficiency percentage was for each depth.

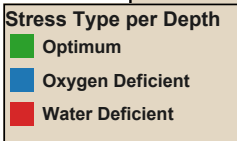
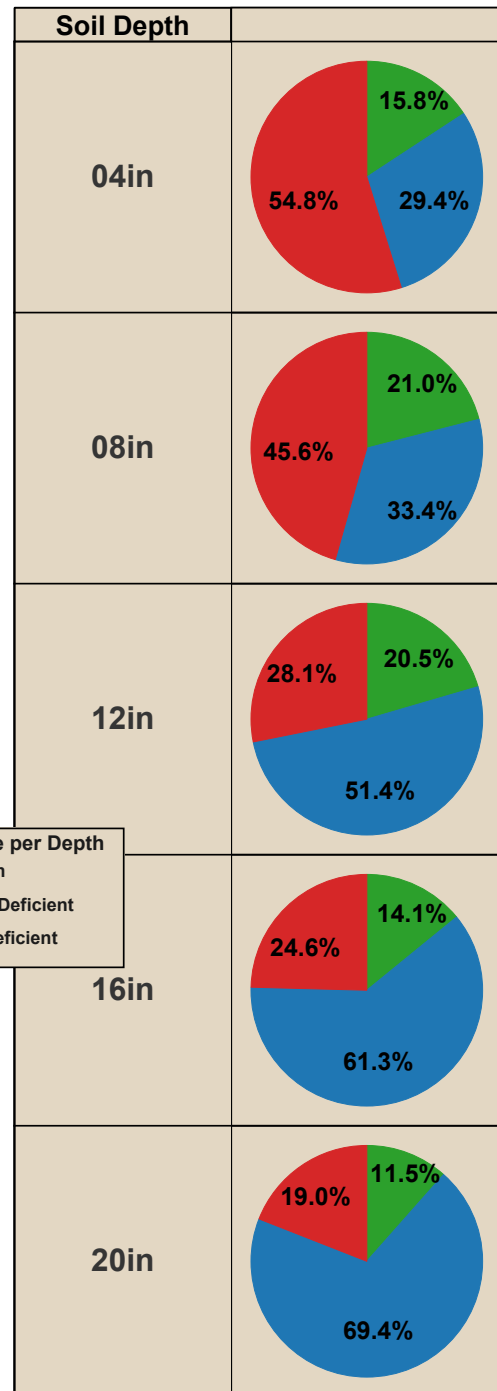
The higher the percentage in the optimum the better the soil environment for the plant to live and be active.

Too much Oxygen deficiency stress has a negative impact to root activity. Not allowing roots to be active reduces the chances to develop a larger and deeper mass of roots.

Too much Water Stress has a negative impact on the amount of water that is available to plant. Thus reducing the amount of roots that can deliver water to the plant.

Our data shows that there is a direct relationship between Soil Water Health and Most Active Root Zone.

Soil Water Health



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MARZ (MOST ACTIVE ROOT ZONE)

A management model that specifically identifies and dissects the distribution and strength of active roots. The Most Active Root Zone (MARZ) is that depth of soil where the Plant-Triggered Irrigation system precisely administers irrigation events to meet crop demand.

The analysis breaks down this root activity and determines the depth at which the roots are most active (MARZ) and most efficient in the uptake of water. We then define where the Most Active Root Zone is located where the vast majority of total water is consumed by the plant during all environmental conditions.

MARZ Depth %

Soil Depth	
04in	45.5%
08in	33.5%
12in	16.3%
16in	4.7%

This Most Active Root Zone Depth percentage chart showcases the percentage of time that each depth made up the MARZ over the entire season.

The more depths and the more evenly the % is distributed across those depths over the season creates the best environment for the plants to maximize their production.



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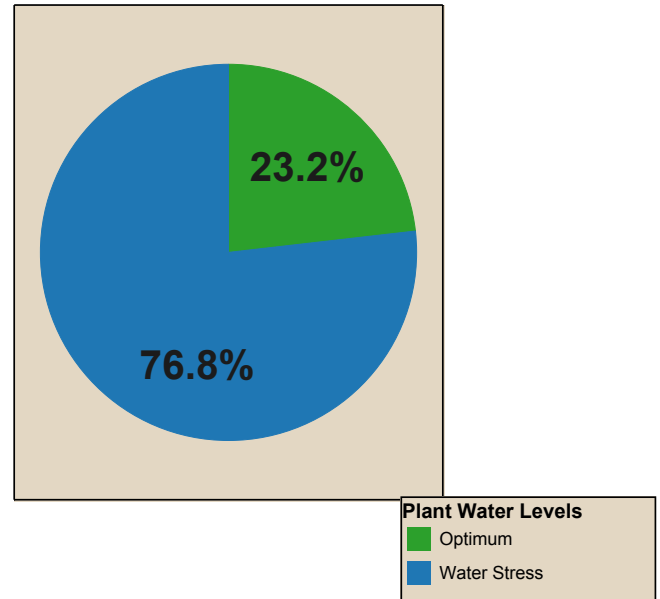
PLANT WATER HEALTH

Plant Water Health is the science and practice of understanding plant intelligence and overcoming the succession of soil moisture stress related factors that limit plants from achieving their full genetic potential.

Plant Water Health is defined as the condition where a plant's yield potential is measured against the effects/impact of water stress within the MARZ (most active root zone).

There are two types of water stress measured. Oxygen Deficiency and Water Deficiency. The duration/amount of the specific stress is also measured.

Plant Water Health



This Plant Water Health chart shows what percentage of the time for the entire season was the MARZ at an Optimum or Water Stress level (too much or too little water)



AU Pat. No. 2011235120
US Patent Pending

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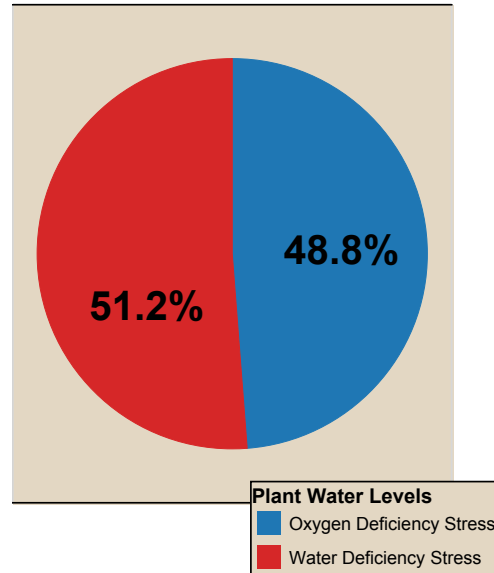


PLANT STRESS

Plants are most productive under optimal conditions. Plant Stress is defined as a condition of too much or too little water within the soil profile. Our analysis can precisely identify these water related stress conditions within the Most Active Root Zone (MARZ) and precisely administer irrigation actions via Plant-Triggered Irrigation, to maintain the proper soil, moisture and oxygen levels within the soil profile for optimum plant performance.

The extremes of drought and saturation conditions are managed towards the optimal soil conditions that positively impact the crop's yield and quality. Reducing negative plant stress is achieved through the immediate Plant-Triggered Irrigation process whereby overwatering and under watering stresses on the plant are mitigated in-season.

PWS Type



The Plant Stress chart breakdowns the stress by type into Oxygen and Water Deficiency stress. This chart shows what percentage of Plant Stress type for the season occurred.



OXYGEN DEFICIT STRESS

Root systems require oxygen for respiration to carry out their functions of water and nutrient uptake. In soil, adequate oxygen is essential. Plant roots growing in soil moisture conditions that exceed field capacity will quickly exhaust the supply of dissolved oxygen and can reduce yield potential unless normalization of oxygen occurs within the Most Active Root Zone (MARZ).



WATER DEFICIT STRESS

Water availability and timing can be a limiting factor in plant growth and yield potential. Plants experience water stress when the water supply to their roots becomes limiting, or when the transpiration rate becomes intense.

It is possible, through Plant-Triggered Irrigation, to separate the effects of water deficit that occur before a large part of a plant's Most Active Root Zone has been depleted of water.



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YIELD IMPACT ANALYSIS

Diagnostic assessment and predictive model that factors in the positive financial benefits, like bridging Plant Stress to yield potential, of implementing Plant-Triggered Irrigation in order to manage and reducing Negative Plant Stress for production agriculture.

Yield Impact

37.6%

This Yield Impact chart shows the percentage of improvement that can be made if we were able to reduce stress completely.

The lower the number the better the water management was within MARZ and the less the stress had an impact on yield. Thus the higher the number the more room for improvement in water management and the more the stress had an impact to reducing yield.

One needs to remember that this is one measurement. Meaning that we can not look at this alone and needs to be analyzed along with SWH, MARZ and PWH.



*AU Pat. No. 2011235120
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