Calibration System

Optimizing Crop Yields: Specific Water Voltage and Light Manipulation per Species

Description

Dunedain has developed a method to naturally manipulate the voltage in water (see “Vitalizer” document). This has many important implications, one of them being for the agriculture industry. Plants fed vitalized water show a significant increase in biomass and nutrient density. We have discovered a base water voltage value that seems to affect all plants tested very positively.

Taken a step further, we have also discovered that plants respond differently to varied vitalization strengths (aka water voltage). While all species respond favorably to a base vitalized voltage, as compared to non-vitalized control water, one species responds differently than another to varying voltages. And continuing in this line of experimentation, within the varying periods of the growth cycle for a given species, varying voltages can certainly be optimized. The incubation stage is very different than the growth and flowering stages; the plant’s energy needs change like any growing organism as it matures.

Additionally, subtle lighting changes in color and intensity have a similar effect. The traditional practice of primarily using red and violet/UV - the two ends of the light spectrum - are not necessarily the best choice for all species, for all stages of the growth cycle. Dunedain has found that by varying colors and intensities at specific times, and by mixing colors more liberally, each species responds differently.

Below is an example of varying vitalization strengths on wheatgrass. There are four samples - one control and three varied vitalized strengths. The biomass for each varied. Perhaps more importantly, the transpiration (droplets on blade tips) varied significantly. The wheatgrass with the greatest number of transpiration/water droplets had the highest nutrient content.

Control water ● Very little transpiration & guttation observed ● Approx 6%	
Vitalization method #1 ● Increased droplets ● Approx 14%	

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Vitalization method #2 ● Further increased droplets ● Approx 48%	
Vitalization method #3 ● Highest amount of transpiration / guttation ● Approx 84% ● Highest amount of nutrient density	

Manipulation of water vitalization strength and lighting colors/intensity can significantly enhance plant biomass and nutrient density. A calibration system can be developed - valuable intellectual property to help optimize food and nutrition needs.

Intended Use & Purpose

The Calibration System for crops is pure intellectual property. While is intended to be developed and used in conjunction with Dunedain's "Vitalizer" and related agricultural products, this is valuable stand-alone information. It can and should be utilized independently, for all growers. It is hoped that the fields of biology and agriculture can benefit from any progress made in this "calibration" direction.

Status

Over a two year period Dunedain has performed small scale vegetable growing experiments. These experiments began as a way to quantify the effects of vitalized water (see "Experiment Data Points" document). As these experiments continued, we began exploring varying the water voltage and lighting. As mentioned above, these experiments were across plant species, as well as across growth cycles for a given species.

It became clear that subtle changes have significant effects. There seems to be much room for improvement to increase growing efficiency. Dunedain would like to perform further experimentation in this area. The goal would be to formally develop a calibration system for a fixed number of plant species - best practice optimization. Then hand this over to others to adopt for expanded plant species.

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Budget, Resources, Timeline

Dunedain would need access to some agricultural facility: small farm, greenhouses, grow rooms, etc. We would like to team up with growers and horticulturists to set up a controlled environment to thoroughly study vitalized water and lighting on a few carefully chosen plant species. Cannabis/CBD is of particular interest.

Project	Scope	Resources	Estimate	Duration
Calibration System	Controlled growing area - indoors. Water vitalization, light colors & intensity. Proper measuring equipment required: water voltage, plant nutrition analysis, biomass, light intensity, etc. Need to experience multiple growing harvests.	Dunedain Growers Horticulturist Engineer	$750,000	12 months

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