

MISSION IMPOSSIBLE



Raising Market Competitiveness Through In-Plant
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BERRY “FINESSE”

Editor Dr. Jeff Lim

Fieldwork by ChongMing

CHALLENGES OF BERRY CULTIVATION

Berry growers globally face a myriad of challenges, from unpredictable climate conditions and pest infestations to labor shortages and rising costs, all of which threaten their productivity and profitability (Rabo Bank).

In-plant preservation is an innovative approach in modern agriculture that focuses on enhancing the natural resilience of plants during their growth phase. This method involves using advanced biotechnological solutions to fortify plants against environmental stressors, pests, and diseases, ensuring they remain robust from cultivation to harvest. For strawberries and blueberries, in-plant

preservation is particularly crucial. These berries are highly susceptible to spoilage and quality degradation due to their delicate nature. By integrating in-plant preservation techniques, growers can significantly improve the shelf life, nutrient density, and overall market competitiveness of their produce, meeting the increasing consumer demand for fresh, high-quality berries year-round.

In this SPECIAL ISSUE, we apply the principles of plant metabolism discussed in [ISSUE 1](#), applying them as a tool to raise in-plant preservation effects naturally, without the use of synthetic chemical inputs. The solutions in this SPECIAL ISSUE are field tested at actual commercial farms, delivering JUST BETTER performance.

PROPRIETARY GROWING SOLUTION FOR CLIMATE CHANGE

The challenges in berry cultivation comprised environmental stressors, pests and diseases.

REAL WORLD EXAMPLES

Drought:

- **California, USA** - The prolonged drought in California has significantly impacted berry yields, particularly strawberries. Growers have reported reduced fruit size and lower overall yields due to water scarcity. This has led to increased costs for irrigation and water management..
- **Catalonia, Spain** - In Catalonia, drought conditions have affected various fruit crops, including berries. The lack of sufficient water has resulted in smaller fruit sizes and lower yields, impacting the profitability of berry farms

Severe Precipitation:

- **UK, 2022** - The UK experienced record-breaking rainfall in some regions, leading to waterlogged fields and root rot in berry crops. This excessive moisture caused

PROPRIETARY GROWING SOLUTION

Fieldwork by ChongMing



FARM TESTED NATURAL DROUGHT AND SEVERE PRECIPITATION PROTECTION EVERY HARVEST							
Berry	Harvest Security	Insects Protection	Disease Protection	In-Plant Preservation	Shelf-Life	Storage	Growth
Blueberry	100%	Yes	Yes	Yes	+ 14 Days	Chill	Yes
Strawberry	100%	Yes	Yes	Yes	+ 5 Days	Chill	Yes

JUST BETTER: Complete regime applies. Suitable for both substrates and soil cultivation. No insects are killed. Insects protection achieved by raising metabolism in plants for production of complex carbohydrates content, in turn influence the secondary metabolic profile of volatiles that "repels" feeding insects. Plants are naturally disease free due to salient cell walls owing to healthy Ca Channel, showing up as improved vigor and higher Brix values.

significant losses in strawberry and blueberry yields.

- **Florida, USA** - Heavy rains and flooding in Florida have disrupted berry production cycles, causing delays in planting and harvesting. The excess water has also increased the incidence of fungal diseases, further reducing yields. Delays in planting and harvesting. The excess water has also increased the incidence of fungal diseases, further reducing yields.

Temperature fluctuation:

- **Chile:** In recent years, Chile has faced unusual temperature fluctuations, with sudden cold snaps followed by heatwaves. These extreme conditions have stressed berry plants, leading to inconsistent fruit development and lower quality yields.
- **Australia:** Australian berry growers have reported challenges due to extreme temperature variations. Heatwaves have caused sunburn on berries, while unexpected frosts have damaged blossoms, reducing the overall harvest

PLANT HEALTH AS PREVENTIVE TOOLS

The key to unlocking natural in-plant resistance to insects, diseases, drought and severe precipitation lies in controlling plant metabolism by supplying high quality nutrients in their bio-available chemical form. Berries are C3 plants, require sunlight, water, nutrients, CO₂ and chlorophyll to perform photosynthesis. In [ISSUE 1](#), we explained plant health as a function of primary and secondary metabolisms. This symbiotic relationship arises in all healthy plants that must achieve a maximum and consistent value for primary metabolism for growth before secondary metabolism can become self sufficient. Secondary metabolism does not contribute towards plant growth but came about due to in-plant gene expression triggered by exogenous events, such as environmental stressors. Activating secondary metabolism consumes a lot of energy so a pipeline of high quality nutrients must be supplied. Modern AG lacks this fundamental understanding when we applied the eliminative mindset of modern medicine, in turn creating a vicious loop in which growers are perpetually facing mounting challenges that cannot be resolved.

In [ISSUE 2](#), we shared how the use of smart ingredients comprised bio-enzymes, L-amino acids, micro-nutrients and stratified biofertilizer with NPK content of 0.5%, 0.3% and 0.1% in one single application on brassica is sufficient to change feeding behavior of sucking pests, while growing a one week old brassica into a two week old physiology. At the end of the harvest, treated brassica showed significantly elevated Total Soluble Solids (TSS) as Brix in percent, completely eliminating the need to apply pesticides or herbicides, thereby reducing exposure to zero.

Somewhere in Europe at an organic blueberry farm under the capable hands of a famous family owned farm and grower, the year 2024 has seen unprecedented severe precipitation, followed by heat stress at persistent 30 °C, for a total of 4 months while on [partial](#) iBioStim regime. Harvest continued with clear evidence for new growth under unparalleled adverse

climative conditions, presenting compelling testament to the natural cellular regenerative power of bio-enzymes supporting cellular division and multiplication in face of persistent environmental stressors. In Australia, under similar conditions, nothing was harvested since no berries grew.

In [ISSUE 4](#), we shared how a C3 plant grower was equipped with a special recipe to protect his crops from frost and chill due to climate change. Under normal circumstance, the chilli crop would succumb when temperature plunge below 14 °C, manifesting as immediate bowing of the plants and shrivelling of the chilli fruit. By putting the farm on a complete iBioStim regime, the entire farm is now thriving. On the other side of Asia in Japan, adverse climatic events of minus 3 °C, a temperature range of 17 °C beyond the genetically programmed survival range for chilli, is no match for the active bio-enzymes at work in the background for bio-conversion. More importantly, the farm is producing consistent 0.8kg/plant above its normal harvest of 1.2kg/plant, providing clear evidence environmental stressors can be negated to continue support for primary metabolism (plant growth), matching back to the thesis in [ISSUE 1](#).

In the [SPECIAL ISSUE](#) on [GUTTATION](#) in strawberries, we showed how a single foliar spray can revitalise the blocked calcium channel that prevented nutrients from accessing the whole plant, showing water droplets forming on the tip of leaves in the morning within 24 hours of application. In parallel, foliars that are burnt due to excessive use of mineral fertilisers are progressively healed with increasing application of specific strawberry recipe. This is to say, a strawberry farm on complete iBioStim regime produces healthy, disease free plants and fruits, meeting consumer demands for organoleptic qualities and aromatic for behavioral conversion, positively impacting on bottomline. The conventional correlation to guttation as a symptom for water stress in the roots is therefore invalidated since no change was made to existing irrigation. Simply, we return [JUSTICE](#) to a community in the soft fruit sector who are not growing berries properly due to mis-information provided by existing education system that does not necessarily perform in a field setting.

In the [SPECIAL ISSUE](#) on [PRESERVATION](#) in guava fruit, a farmer-led initiative supported natural shelf-life extension by additional 5 days under tropical climatic conditions through exogenous intervention post harvest, presenting clear evidence for natural resistance to reactive oxidative stress due to release of ethylene as a natural plant hormone in ripening process. The same ripening is also applicable to other fruits such as apples, mangoes, bananas, just to name a few, and therefore as beneficiaries using adapted iBioStim recipes and application regimes.

ECONOMIC AND MARKET BENEFITS

The economic and market differentiation for a farm on iBioStim regime cannot be emphasized further, ranging from natural abiotic stress resistance, to biotic stress resistance, to in-plant preservation for natural extension of shelf-life while raising productivity and nutrient density on a plate. These qualities are backed by commercial farms and orchards supplying directly into major supermarkets around the world.

With rising demand for fresh produce globally, consumers are increasingly seeking fresh, high-quality berries, driving the need for effective preservation methods. There is a growing emphasis on sustainable preservation methods, such as biodegradable packaging and eco-friendly coatings and now, natural in-plant preservation on iBioStim regime beyond the current definition of technological advancement comprised nanomaterials in edible films.

Advanced preservation technologies can be expensive, which may limit their adoption, especially amongst SME growers. By uplifting performance across the entire cultivation cycle, we are returning **JUSTICE** to sustainable farming once more, with profitability across the entire value chain as a priority.

CONCLUSION

In an industry where external environmental stressors are competing with growers for harvest **SUCCESS**, we bring security to the table by focusing primarily on delivering plant health, meeting harvest goals while also addressing the insatiable needs of discerning taste buds of the wider consumers today.

A new chapter in the whole of modern AG is now being rewritten.

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