Homeopathy improves crop yields in strawberry cultivation

Faedo L, Matias C, Verdi R, Wright J, Rayns F, Kretzschmar A, Boff P. The use of mineral dynamised high dilutions for natural plant biostimulation; effects on plant growth, crop production, fruit quality, pest and disease incidence in agroecological strawberry cultivation. *Biol Agric Hortic*. 2024;**40(4):**267-287.

Synopsis

Strawberry (*Fragaria* x *ananassa*) production faces significant challenges in balancing crop productivity with environmental concerns. Conventional cultivation relies heavily on pesticides and fungicides, positioning strawberries amongst the most contaminated crops globally. Plant biostimulants[1] represent an emerging approach for enhancing plant growth and development whilst minimising residual environmental impact. This study, by Faedo and colleagues, investigated whether mineral-based homeopathic preparations could function as effective biostimulants in agroecological strawberry production systems.

The research comprised two greenhouse experiments conducted in Brazil: the first at the University of Santa Catarina State (UDESC) in Lages in 2019, and a replication at the Federal University of Santa Catarina (UFSC) in Curitibanos in 2021. The study employed a rigorous protocol, including randomised block design and double-blind[2] treatment application. Findings from previous biostimulant research on plants informed the selection of homeopathic treatments and the choice of potency to be used.

Nine treatments, all in 12CH potency, were selected for assessment: seven mineral-based homeopathic preparations (*Sulphur*, *Phosphorus*, *Kali carbonicum*, *Calcarea carbonica*, *Silicea terra*, *Natrum muriaticum*, and *Mercurius solubilis*), plus two controls – distilled water and potentised distilled water 12CH[3]. Each preparation was applied by mixing 1 ml with 49 ml distilled water, administered every 15 days directly to plants using graduated containers. Nine repetitions were performed for each treatment assessed.

Results demonstrated specific biostimulation effects across multiple parameters, dependent on the treatment applied to the plants:

- *Sulphur* 12CH, *Phosphorus* 12CH, or *Kali carbonicum* 12CH application resulted in increased plant growth and crop yield compared to controls;
- *Sulphur* 12CH and *Silicea terra* 12CH both reduced incidence of leaf spot disease (*Mycosphaerella fragariae*);
- *Sulphur 12 CH, Silicea terra* 12CH and *Calcarea carbonica* 12CH enhanced root system development.

[1] Substances or microorganisms applied to plants, seeds or soil that stimulate a plant's natural processes, enhancing plant health

[2] Researchers and other analyst-assessors were unaware of which treatments each plant received until after experiments were concluded

[3] Distilled water subjected to the same manufacturing process as the homeopathic preparations i.e. multiple steps of dilution and succussion (vigorous shaking with impact)

Silicea terra 12CH and *Sulphur* 12CH were also found to have a particular stimulatory effect on plant growth and vigour, contributing to natural resistance against environmental stress from pests and diseases. Whilst no biochemical analyses were performed to elucidate mechanisms, the authors noted that previous research has demonstrated that homeopathic *Sulphur* can activate biochemical defence mechanisms in beans (*Phaseolus vulgaris*), acting as resistance elicitors[1].

Several methodological strengths enhance the reliability of these findings. The study employed rigorous experimental design, including double-blind treatment application and randomised block design, effectively minimising potential bias and controlling for environmental variation within the greenhouse. Repetition across two years at different locations demonstrates reproducibility of the results, further strengthening their validity.

However, some limitations warrant consideration. As an exploratory investigation aimed at identifying which dynamised high dilutions (homeopathic preparations) yield promising results, the study generated hypotheses rather than reaching definitive conclusions about optimal protocols. Additionally, controlled greenhouse conditions, while providing experimental precision, may not fully represent field production scenarios where plants experience greater environmental variability and complex pest pressures; field validation would therefore be a valuable next step.

It is important to note that the results of this study align with previous agrohomeopathy research, which found that:

- *Sulphur* 12CH increases plant height in strawberries[2];
- *Silicea terra* 12CH and *Phosphorus* 12CH increase plant height in cucumber (*Cucumis sativus*)[3], turnip (*Brassica napus*)[3] and tomato (*Solanum lycopersicum*)[4] crops
- *Sulphur* 12CH stimulates growth in radish (*Raphanus sativus*), increasing fresh and dry matter mass, as well as leaf area[5].

Thus, the study of Faedo *et al* builds on the growing evidence base supporting the application of homeopathy in agriculture, suggesting that mineral-based homeopathic preparations could act as viable plant biostimulants for agroecological strawberry production.

Importantly, these positive results – demonstrating measurable physiological and agronomic responses to the treatments under robust experimental conditions – challenge common arguments dismissing homeopathic preparations as mere placebo effects.

Given the urgent need for sustainable alternatives to conventional pesticide-dependent agriculture, homeopathic preparations represent a promising tool within integrated agroecological management strategies that warrant further investigation.

References

1. Deboni TC, Cargnelutti D, Ghizzoni JC et al, 2021. Actividad peroxidasa y concentración de proteínas en Phaseolus vulgaris l. tratado con preparaciones homeopáticas. *Resea Soci And Develop*. **10(9):**e59110918457–e59110918457.
2. Betti L, Trebbi G, Majewsky V et al 2009. Use of homeopathic preparations in phytopathological models and in field trials: a critical review. *Homeopathy*. **98(4)**:244–266. doi: 10.1016/j.homp.2009.09.008 .
3. Abasolo-Pacheco F, Ojeda-Silvera CM, García-Gallirgos V. et al 2020. Effect of homeopathic medicines during the initial stage and vegetative development of cucumber plants (Cucumis sativus L.). *Ter Latinoam*. **38(1)**:165–180.
4.Modolon TA, Boff P, Boff MIC, Miquelluti DJ. 2012. Homeopathic and high dilution preparations for pest management to tomato crop under organic production system. *Hortic Bras*. **30(1)**:51–57.
5. Bonato CM, Silva EP. 2003. Effect of the homeopathic solution sulphur on the growth and productivity of radish. *Acta Scientiarum Agro*. **25(2)**:259–263.