Nature versus machine: Sensory evaluation of robot-cultivated basil affected by mechanically induced stress

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Background

Plant stress is a research field studying plants' reactions to suboptimal conditions leading to effects on growth, crop yield, and resilience to harsh environmental conditions. Effects induced by mechanical stress have been shown to be beneficial, both in futuristic commercial growing paradigms (e.g., vertical farming), as well as in altering the plant's nutritional content.

Aim

- Investigate robotic cultivation platform practices and how stress-inducing protocols affect the plants' sensory profile.

- Improve rate of automation of plant cultivation protocols by evaluating the experimental design when using a multi-disciplinary approach, combining robot cultivation, chemical analysis and sensory analysis.
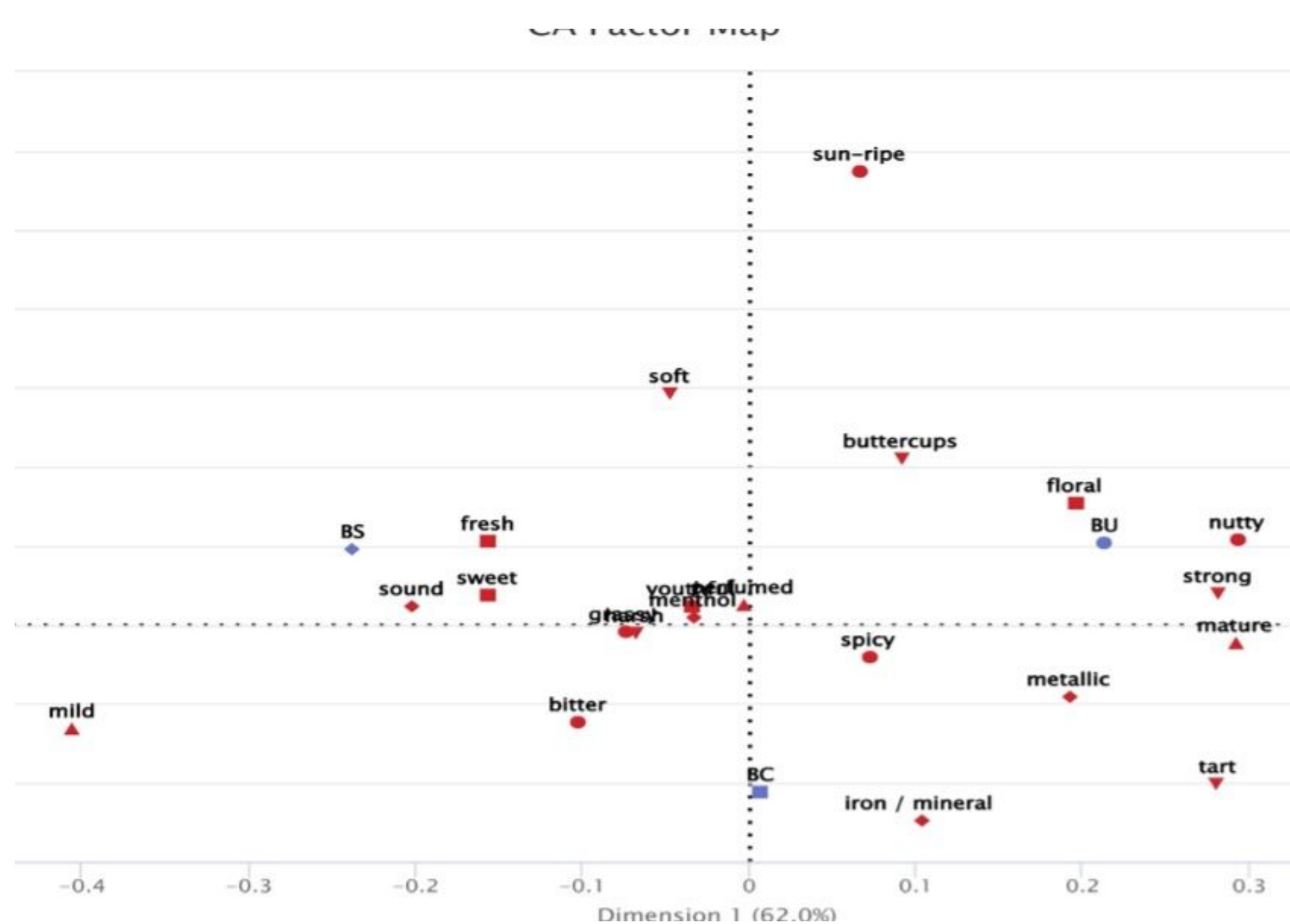
Liking (L) and Just-About-Right (JAR)

CA Factor Map
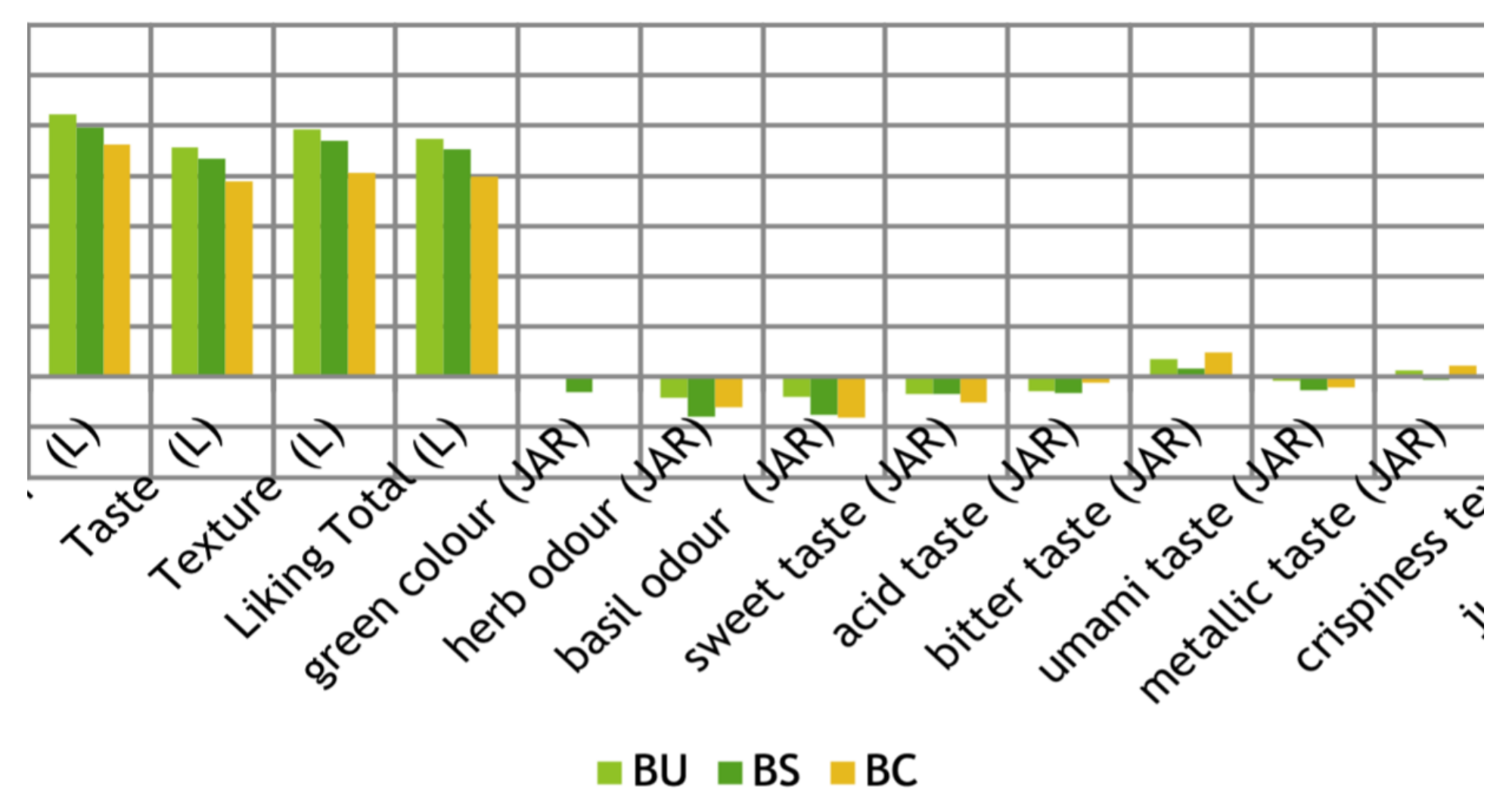
Conclusion:

Presented mechanical cultivation system has the potential for producing a higher quality of fresh herbs. The application of mechanical stress has not negatively affected the sensory aspects, suggesting the earlier reported health benefits of stressed plants do not come at the expense of the sensory experience. The experimental design can be further developed to adapt rapid sensory evaluation techniques to increase automation of plant cultivation protocols.

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