



Grower Summary

**Culinary herbs: determining the
basis of variation in herb flavour**

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Title: Culinary herbs: determining the basis of variation in herb flavour

Ana Cristina Contente¹, Maria Jose Oruna-Concha¹ and Carol Wagstaff¹

¹ Department of Food and Nutritional Sciences, University of Reading PO Box 226, Whiteknights, Reading, RG6 6AP

Supervisors: Professor Carol Wagstaff and Dr Maria Jose Oruna-Concha

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1. Industry Summary

Culinary herbs such as basil (*Ocimum basilicum*), coriander (*Coriandrum sativum*) and rosemary (*Rosmarinus officinalis*) are crops grown across the world for their healthy characteristics and distinct flavours. They can be consumed fresh or dried, in salads or as garnish, in soups, sauces or curries, forming essential ingredients in many cuisines. Research investigating the aroma profile of these herbs often excludes information about the variety, production type and other growing conditions resulting in inaccurate data conclusions. These variables have been described in published literature to have an impact on the flavour profile of other crops such as celery and lettuce.

Basil, coriander and rosemary were grown using different production methods across several years (2018, 2019, 2020, 2021) and at multiple sites within the UK. The influence of factors including production methods, geographical location, production season and year on the aroma composition of these herbs was investigated. The aroma profile of the three herbs was determined using solid-phase microextraction gas chromatography-mass spectrometry. Differences in volatile composition and influence on sensory perception were analysed using sensory profiling with a trained panel (n = 11). Finally, basil and coriander samples were presented to a consumer panel (group size/population (n) = 117, and (n) = 106, respectively) to identify consumer acceptance and attribute preference.

Significant differences in the volatile composition were influenced by production method, plant maturity and environmental factors, leading to significant differences in the sensory profile.

- Temperatures between 10-20 °C resulted in higher proportions of monoterpenes and phenylpropanoids for rosemary and basil, and aldehydes for coriander.
- Higher abundances of monoterpenes and phenylpropanoids were found desirable in rosemary and basil by the consumer, and aldehydes for coriander.
- The influence of soil, water source and lighting was herb specific.
- Herbs with higher abundances of aroma compounds were described as having higher flavour and aroma intensity by the sensory panel.

The results from the present study show how different growing conditions affect the flavour of the herbs and consumers' preference. This allows growers to better understand their products and be aware of how changes in production will influence the final product and how this will be received by the final consumer.