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Authors	Ronan Symoneaux
Contributors	Ronan Symoneaux, Michael Bom Frøst, Agnès Giboreau, Alexia Jauniau
Reviewers	Michael Bom Frøst, Agnès Giboreau, Monika Mieszczakowska-Frąc
Approved for submission	Monika Mieszczakowska-Frąc

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V0.2	21/10/2025	Second draft version incorporating review comments
V0.3	22/10/2025	Final draft send to Coo
V1.0	22/10/2025	Final version submitted to EC by the Coo

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EXECUTIVE SUMMARY

Deliverable D1.1 presents the implementation and outcomes of a comprehensive training program organized within Work Package 1 (WP1) – Increasing competence of InHort staff in the range of sensory and consumer research. The activities took place between November 2024 and June 2025 in Skierniewice and fully addressed the objectives defined for WP1.

The main goal of WP1 was to expand the research competencies of InHort staff by introducing advanced, modern, and computer-assisted methods in sensory and consumer research. The program aimed to enhance the scientific team's experience in fast quality evaluation, support early-stage researchers, and promote the exchange of best practices between partners.

In alignment with these goals, three intensive three-day training sessions (November 2024, March 2025 and June 2025) were conducted, each corresponding to the core thematic areas of WP1:

- Task 1.1 – Sensory evaluation methods: introducing participants to good laboratory practice, sensory panel building, and classical and rapid sensory techniques such as QDA, CATA, and projective mapping.

- Task 1.2 – Consumer-oriented research: focusing on consumer perception, emotional profiling, and innovative research tools such as Kelly repertory grid, laddering, and EsSense™ profiling.

- Task 1.3 – Computer-assisted methods: providing hands-on experience with statistical and sensory software (FIZZ, XLSTAT, CONSOCHECK) for questionnaire design, data collection, and multivariate data analysis.

A total of 30 staff members participated in an introductory phase focused on the fundamentals of sensory analysis and taster selection. Subsequently, 15 researchers attended advanced-level training sessions that deepened their understanding of consumer testing, data analysis, and sensory panel management.

The training program combined theoretical instruction and practical exercises, enabling participants to apply modern sensory and consumer research techniques directly to real product evaluation scenarios. Knowledge assessment questionnaires were administered before and after the sessions, and participant feedback confirmed the effectiveness and relevance of the program.

Overall, Deliverable D1.1 demonstrates that WP1 objectives have been successfully achieved. The program has significantly strengthened InHort's research capacity in sensory and consumer studies, enhanced the methodological expertise of its staff, and laid the foundation for the sustainable integration of advanced sensory and consumer research methods into ongoing and future projects.

SYNTHESIS TABLE

Category	Indicators/Data	Values/Comments
Initial Objectives	Number of planned training sessions	3 sessions (3 days each)
	Themes covered (as per DoA)	T1.1 sensory evaluation methods and laboratory best practices T1.2 Consumer research approach, T1.3 Computer tools for sensory analysis
	Target audience	30 participants (introductory), 15 participants (advanced)
Achievements	Number of sessions delivered	3 sessions (November 2024, March 2025, June 2025)
	Total number of trained participants	32 (introductory), 15 (advanced)
	Methodologies taught	QDA, CATA, hedonic tests, ranking tests, interviews, focus groups, preference mapping,…
	Training materials produced	Available on SharePoint
Quantitative Indicators	Overall satisfaction rate (introductory)	>90% totally or mostly satisfied
	Overall satisfaction rate (advanced)	>80% totally or mostly satisfied
	Skill improvement (self-assessment before/after, advanced)	(graphical data available)
	Number of participation certificates issued	47 (32 + 15)
Qualitative Indicators	Feedback on clarity and structure	Very positive (>90% satisfied)
	Feedback on relevance to INHORT	Very positive (>90% satisfied)
	Feedback on educational materials	Very positive (>90% satisfied)
	Feedback on quality of explanations	Very positive (>90% satisfied)
	Feedback on theory/practice balance	Balance appreciated; request for more hands-on practice (especially FIZZ)
Impacts	Motivation to participate in future INHORT panels	High motivation expressed
	Strengthening internal capacities in sensory and consumer analysis	Yes, especially for the 15 researchers

1. INTRODUCTION

In accordance with Parts A and B of the DOA document, the three themes of WP1—(1.1) Training in sensory evaluation methods and laboratory best practices, (1.2) Consumer-oriented research approach, and (1.3) Modern and computer-assisted methods for sensory and consumer research—were distributed across the three sessions to provide a coherent and varied program.

The sessions alternated between theoretical components, practical exercises, and the use of computer and statistical tools. This program was jointly developed by the four project partners. The three partners (ESA, UCPH, and LYFE) contributed their expertise to each session. The following lecturers were involved: Ronan SYMONEAUX, Michael BOM FRØST, Celine BRASSE, Alexia JAUNIAU, Marijke HILTJE HIELKEMA.

The program began with an initial two-day phase involving 32 participants. This phase introduced sensory analysis and provided an overview of the main sensory methodologies. Participants were introduced to a wide range of methods, including QDA, Rapid Sensory Method, CATA, etc. This stage also involved setting up standardized tests for taster selection.

The objective of this phase was to raise awareness among all potential future tasters about sensory best practices and to prepare them to become members of INHORT's future sensory panels. Participants included both scientific and technical staff from the Fruit and Vegetable Storage and Processing Department, as well as key members of INHORT involved in assessing the quality of raw materials from the Department of Horticultural Crop Breeding, Department of Cultivar Testing, Nursery and Gene Bank Resources.

The remainder of the program was reserved for a selection of 15 individuals from the initial 32. These were researchers and early-career researchers (ECRs) from INHORT, responsible for implementing or recommending sensory analysis in INHORT's research projects. The program alternated between the three themes of WP1 tasks:

- The first session focused on laboratory best practices (1.1), panelist selection (1.1), and an introduction to no-code statistical tools for sensory analysis using FIZZ software (1.3), thus covering concepts from tasks 1.1 and 1.2.
- The second session, in March, was primarily dedicated to task 1.2 on consumer studies and task 1.3 on computer and statistical tools, while also reviewing descriptive approaches (CATA) and laboratory best practices (1.1).
- The session in June placed greater emphasis on descriptive approaches (1.1), their implementation in FIZZ, and statistical processing (1.3). Theme 1.2 was also addressed through a session on preference mapping and another on behavior and expectation studies.

Some adjustments to the content and schedule were made between the milestone MS1 version and the final version to accommodate participant requests and trainer constraints.

2. INTRODUCTION TO SENSORY EVALUATION (32 PARTICIPANTS)

Training Content

Thirty participants attended the introductory training on sensory analysis. The following figure shows the schedule for these sessions. The training covered an introduction to sensory analysis, including some principles of sensory physiology, an overview of the biases that occur during tastings, and the methodological consequences that arise from them. It also included a non-exhaustive presentation of sensory methodologies that can be used in the evaluation of food products. These theoretical sections were interspersed with three practical sessions to apply some of the previously explained concepts and to raise awareness among future tasters. To make the training accessible to all participants, English-Polish translators were provided.

		26/11/2024	27/11/2024
08:00	09:00	Welcome, Participant and Programm presentation	Overview of Sensory Methods and Use in Horticultural Fresh & Processed Products ESA
09:00	10:30	Introduction of sensory evaluation Physiological Basics ESA	
10:30	12:00	Practising Sensory	Practising Sensory
12:00	13:00	Lunch	Lunch
13:00	14:30	Overview of Sensory Biaises & Implication in Sensory Methods ESA	
14:30	16:00	Practising Sensory	

During these training sessions, most of the results were recorded to conduct an initial assessment of the tasters' sensory sensitivity. Given the tasting context, these results are not intended to exclude any tasters but can provide initial insights for INHORT in selecting future panelists. The purpose of these tests was primarily to show future panel leaders the type of monitoring that can be carried out to select panelists and track their performance.

Training Feedback from Participants

At the end of this introductory training, a questionnaire was administered to assess participant satisfaction. The following page presents the graph of the responses to this questionnaire. It appears that most participants were satisfied with this introductory training and are motivated to participate in INHORT's future panels.

The feedback collected from participants highlights a high level of satisfaction with both the content and delivery of the training sessions on sensory and consumer research methodologies.

Participants particularly valued the balance between theoretical instruction and practical application. The integration of tasting sessions and the opportunity to discuss results in real time were identified as key strengths, contributing to a more engaging and interactive learning experience. The variety of samples evaluated and the different approaches to sample preparation were also considered highly stimulating and relevant.

The clarity and organization of the sessions were frequently commended. Participants emphasized that the material was presented in a clear, structured, and comprehensible manner, with all issues and questions thoroughly addressed. The possibility of using translation tools was also appreciated, as it facilitated understanding among participants with different linguistic backgrounds.

The lecturer's professionalism, competence, and communication skills received consistently positive feedback. Participants highlighted the lecturer's passion, enthusiasm, and ability to convey complex information in an accessible way, as well as his engaging presentation style and sense of humor. The quality of interaction between trainer and participants, along with the trainer's availability to answer questions and provide explanations, was noted as a major strength of the program.

The practical components of the training, particularly exercises involving the identification of flavors, aromas, and sensory profiling, were described as highly valuable for enhancing participants' practical skills and understanding of sensory evaluation. The combination of theoretical knowledge and hands-on experience was recognized as an effective and motivating learning approach.

Finally, the overall organization and technical support of the sessions were positively assessed. Participants appreciated the commitment of the organizing and technical staff, the professional atmosphere, and the freedom of expression that characterized the training environment.

If participants expressed overall satisfaction with the training sessions, they also provided constructive suggestions for future improvements.

Several participants recommended slightly longer or more frequent breaks between theoretical modules, as the current schedule was considered intensive. A few comments indicated that the early morning sessions (8:00–10:30) with limited breaks were tiring, and that one longer or two shorter breaks would help maintain attention and comfort.

It was suggested that the duration of the training could be adjusted depending on participants' experience levels. While the timing was appropriate for professionals already familiar with sensory analysis, beginners would benefit from a slightly extended program. Participants also proposed smaller sensory groups to enhance individual participation and concentration during tasting activities, as well as more space to ensure better organization and comfort.

Several comments emphasized the usefulness of having printed training materials or presentation handouts for note-taking, as well as larger font sizes in presentations to improve readability.

There was also interest in expanding the practical component with exercises involving more complex mixtures and products with distinctly different flavors or textures (e.g., sweet vs. savory items). Participants encouraged the inclusion of additional practice sessions to reinforce learning and deepen sensory experience. Finally, participants recommended including more explanations about sensory attitudes and quality control procedures before starting practical sessions, to ensure consistent understanding among all attendees.

3. ADVANCED PROGRAMME ON SENSORY EVALUATION (15 PARTICIPANTS)

Training Content

Fifteen participants took part in three separate three-day sessions. They first attended the introductory session with the other participants, followed by a more intensive and detailed program.

During the first session in November 2024, the selection of panelists and good laboratory practices in sensory analysis were covered. A presentation of the FIZZ software—recently installed at INHORT—was given, along with an overview of several no-code software options.

The second three-day session in March 2025 focused primarily on consumer studies, including an introduction to hedonic quantitative studies with paired comparisons, ranking tests, and acceptance tests. A segment was dedicated to the role of context in consumer studies, and another addressed the processing of open-ended questions. One day was devoted to qualitative studies, covering interviews and focus groups. Additionally, the CATA (Check All That Apply) methodology, which can be used with consumers, was presented, along with emotion evaluation.

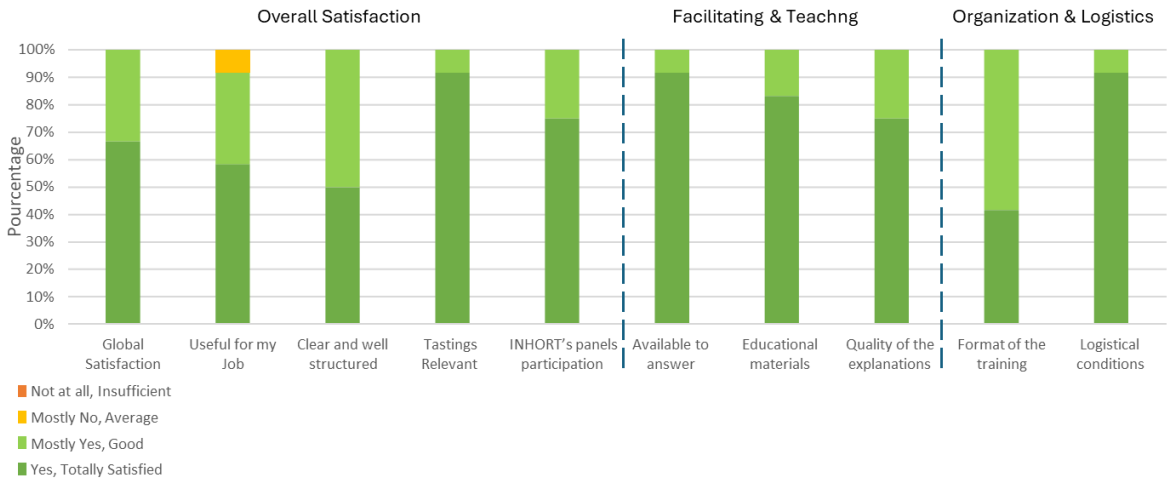
In the final session in June 2025, the Quantitative Descriptive Analysis (QDA) method was introduced, supplemented by a study of the sensory performance of tasters. Preference mapping, at the interface between hedonic studies and QDA, was also explored. Finally, a session on survey implementation had to be replaced due to the trainer's unavailability. Instead, a workshop on Design Thinking was offered. Given the importance of surveys, two additional online sessions were scheduled for late June and late August.

Throughout these sessions, theoretical lessons were complemented by practical exercises and statistical interpretation using no-code tools, as announced. All materials used were made accessible to participants via the project's SharePoint for future reference.

Training Feedback from Participants

At the end of this advanced training, a questionnaire was administered to assess participant satisfaction. The following figure presents the responses to this questionnaire. It appears that most participants were satisfied with this advanced training

Based on their comment, we can summarize that participants expressed a very positive overall evaluation of the training sessions, emphasizing their professional organization, clear structure, and pedagogical quality. The format of the training, which combined theoretical lectures and practical sessions, was particularly appreciated for its coherence and effectiveness in supporting learning.



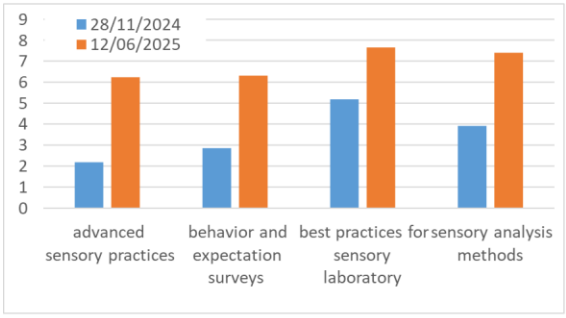
The trainers' expertise, clarity, and communication skills were widely acknowledged as key strengths. Participants highlighted the excellent transfer of knowledge, the expressiveness of the lecturers, and their ability to make complex information understandable and engaging. The enthusiasm and professionalism of the trainers were repeatedly mentioned as contributing to a highly motivating learning atmosphere.

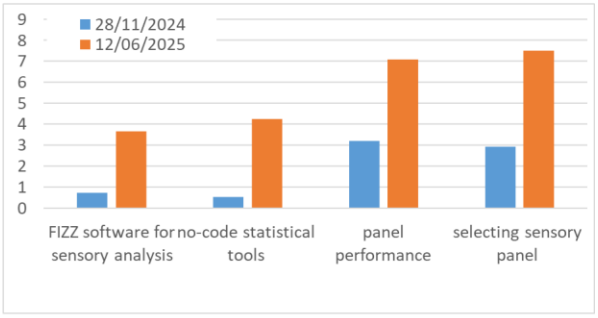
The practical component of the training was considered one of its most valuable aspects. Participants appreciated the opportunity to apply sensory evaluation methods directly, conduct tests themselves, and explore a wide range of methodologies and tools. This hands-on experience was seen as essential for consolidating theoretical knowledge and developing practical competencies.

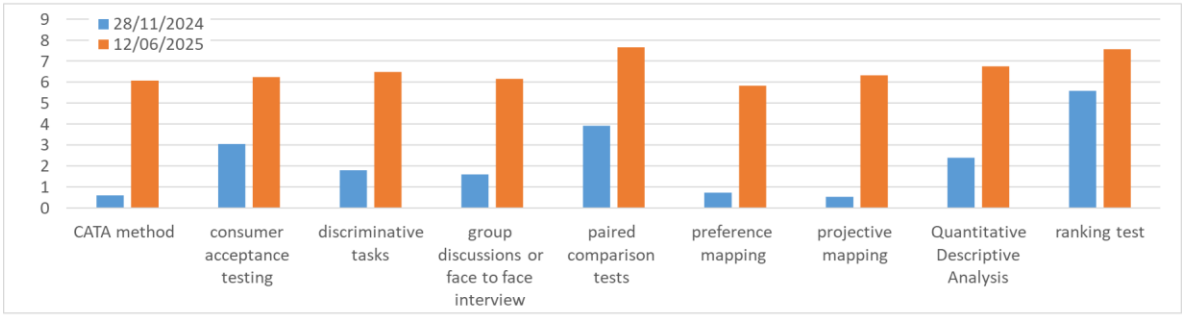
Several participants also noted that the training allowed them to systematize and deepen their knowledge of sensory analysis, gain new insights into modern software and data processing tools, and compare methodologies used across different institutes. The combination of scientific rigor and practical relevance was regarded as a major strength of the program. Overall, the training was perceived as well-structured, professional, and effective, providing participants with a comprehensive understanding of sensory and consumer research techniques.

While feedback was overwhelmingly positive, participants also proposed a few improvements for future sessions. Many suggested incorporating more practical exercises, especially additional practice with the FIZZ software and statistical analysis methods, as these require repeated application to master. Some participants expressed interest in further specialized workshops, such as those focused on sensory perception or the detection of unwanted odours in food packaging. A few comments recommended shorter, better-distributed sessions to reduce fatigue, as the duration and intensity of the program were sometimes demanding. It was also suggested that the selection of participants could be refined to align with individual interests and professional backgrounds, optimizing group interaction. Minor technical suggestions included ensuring the continued efficiency of training logistics and maintaining the professional quality of the sessions already achieved.

Participants in the advanced training assessed their knowledge levels at the beginning and end of the program. The results show a highly significant improvement in their skills.







4. CONCLUSION

In summary, participants evaluated the training as highly successful, combining excellent instruction, practical relevance, and professional organization. The sessions effectively enhanced participants' theoretical understanding and practical skills in sensory and consumer research, while suggestions for improvement mainly concerned increasing practice opportunities and adjusting the training pace for optimal learning.