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Inclusive Agritourism and Visual Impairment through Participatory Action Research: Designing Sensorial Experiences in Rural Farms, Estates, and Agricultural Settings

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Abstract
This exploratory qualitative study was conducted within the framework of the research project *"Sensorial Agritourism at the UTB Integrated Farm"* and the outreach initiative *"Enjoying Tourism through the Eyes of the Soul"*, in Los Ríos Province, Ecuador. The research was carried out between April 2022 and February 2023 using a Participatory Action Research (PAR) methodology, with the active involvement of individuals with and without visual impairments. The objective was to design inclusive sensorial agritourism experiences for people with visual disabilities, considering the productive, cultural, and environmental features of rural farms, ranches, and estates. The most significant outcomes were: (1) the development of an inventory instrument for identifying agricultural and livestock products with touristic potential, based on a sensory appreciation of the landscape; and (2) the creation of a methodological proposal for designing inclusive agritourism activities based on sensory stimulation—specifically smell, touch, taste, and hearing—in agricultural environments. The study emphasizes the importance of integrating sensory accessibility and active participation into the planning of rural tourism experiences, in alignment with the principles of universal design and tourism for all. It also highlights the need for innovative approaches that allow people with visual impairments to enjoy tourism without physical or symbolic barriers. This work provides a replicable methodological contribution for other rural contexts and offers empirical foundations for the development of public policies that promote the inclusion of groups historically excluded from conventional tourism. It contributes to the achievement of the Sustainable Development Goals related to equal opportunity, accessibility, and the reduction of territorial inequalities.

Keywords
tourism accessibility, visually impaired, agrotourism, sensory activities, farm, farms, tourism experience, agrotourism inventory, sensory methodology

INTRODUCTION

The World Health Organization (WHO), through its World Report on Vision (2020), estimates that at least 2.2 billion people globally experience some form of visual impairment or blindness. This condition ranges from moderate to severe visual disability and includes total vision loss, which may be congenital or acquired at any stage of life. In Ecuador, according to data from the Ministry of Public Health (2024), 487,546 individuals are officially registered as having some type of disability—an increase of over 69,000 cases compared to the previous year. Of this total, the National Council for the Equality of Disabilities (CONADIS) reported in November 2024 that 56,644 people have visual impairments nationwide, while in the province of Los Ríos, 2,255 individuals live with visual disabilities.

Tourism, as a human right, must be accessible to all (UNWTO, 2014). However, tourism experiences have historically been centered on visual perception, as noted by John Urry in The Tourist Gaze (1993), a work that reinforced the ocularcentric framing of tourism (Qiao et al., 2023; González Aguirre, 2022; Fusté Forné et al., 2015). Nonetheless, tourism can also be experienced through other senses—hearing, touch, taste, and smell—offering comprehensive, dignified, and meaningful encounters, particularly for people with visual impairments (Darcy et al., 2009; Landeta-Bejarano et al., 2018).

Several scholars have noted that tourism studies have largely neglected the lived experiences of historically marginalized groups, including individuals with non-visible or non-mobility-related disabilities (Kastenholz et al., 2015, as cited in Gillovic et al., 2021; Olaya et al., 2022). Despite international efforts to promote universal design in tourism environments, there remains a significant gap in the creation of inclusive recreational experiences that address the specific needs of people with disabilities—thus affecting their quality of life and restricting their right to leisure and full participation.

In the Ecuadorian context, the legal framework supports accessible tourism as a public policy of high priority. The 2008 Constitution and Ministerial Agreement 2020-047 recognize persons with disabilities and the elderly as vulnerable groups, mandating their inclusion through national-level, binding regulation (Olaya et al., 2024).

In this regard, the present study seeks to contribute to the advancement of scientific literature on inclusive tourism, tourism accessibility, and visual disability, with a particular focus on rural Ecuador. Its general objective is to design a methodology for the development of sensorial tourism activities at the UTB's Self-Sustaining Integrated Farm, specifically tailored for individuals with visual impairments. This proposal aspires to become a foundational tool for creating comprehensive tourism experiences in farms, ranches, estates, or open-air spaces intended for recreation.

METHODOLOGY

This study was conducted using a qualitative exploratory approach within the framework of Participatory Action Research (PAR), a methodological design aimed at promoting social transformation through the active participation of involved stakeholders. The research took place between April 2022 and February 2023 at the Self-Sustaining Integrated Farm of the Universidad Técnica de Babahoyo (UTB), in Los Ríos Province, Ecuador.

The methodological development was structured into three main phases, each comprising specific procedures focused on the design and validation of inclusive sensorial agritourism experiences for individuals with visual impairments:

Phase 1: Design of the Sensorial Agritourism Inventory Instrument

1. Document review and initial observation of the farm's agricultural, livestock, and landscape elements, emphasizing sensorial characteristics (colors, aromas, textures, sounds, and tastes).
2. Development of a data collection instrument tailored to assess agritourism potential from a sensorial and accessibility-oriented perspective.
3. Pilot testing of the instrument, using participant observation and exploratory interviews with key rural stakeholders to refine the criteria for relevance and inclusivity.

Phase 2: Participatory Design of Sensorial Agritourism Activities

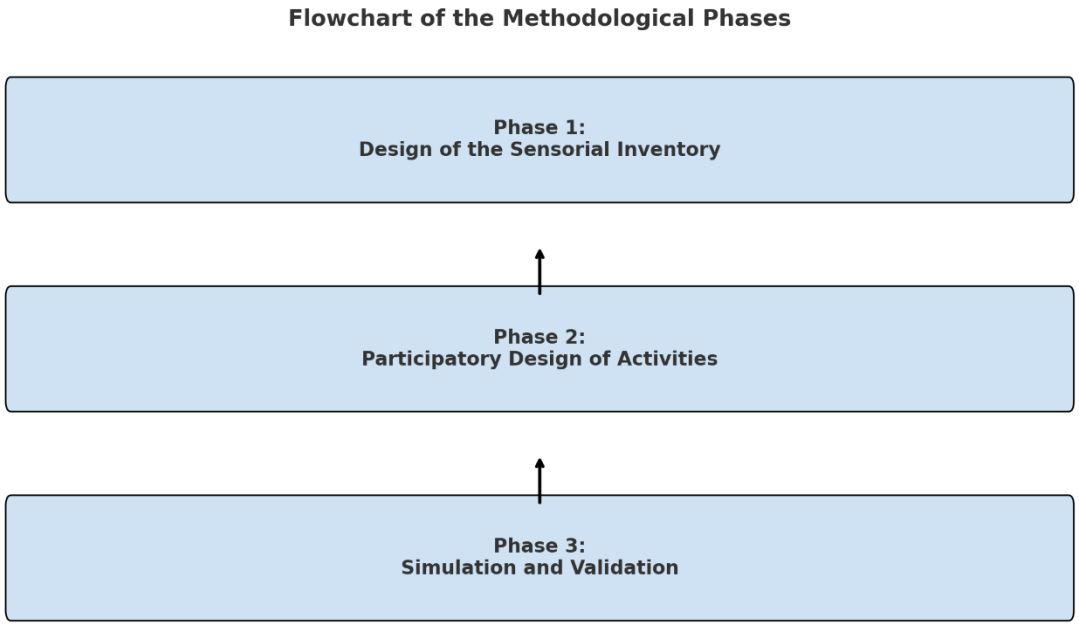
4. Participant selection and recruitment, involving seven individuals with visual impairments (CONADIS-certified) and ten participants without disabilities (three tourism faculty members and seven students from UTB).
5. Collaborative workshops to co-create inclusive agritourism activities that stimulate the senses of touch, taste, smell, and hearing across different farm environments.
6. Systematization and prioritization of proposed activities based on feasibility, operational value, and the inclusive criteria established by participants.

Phase 3: Simulation, Validation, and Methodological Refinement

7. Controlled simulation of the designed sensorial agritourism activities, implemented with the participation of both groups under principles of universal accessibility.
8. Feedback collection through interviews and participant observation during the simulated experience, identifying strengths, barriers, and opportunities for improvement.
9. Validation of the methodological proposal, resulting in an adapted and replicable protocol for rural settings such as farms, ranches, and estates.

Ethical Considerations and Institutional Support

The study received institutional approval from UTB and the collaboration of the Student Welfare Department to ensure informed, voluntary, and safe participation of individuals with visual impairments. The research adhered to ethical principles of respect, dignity, and active inclusion.



Source: Authors.

The research adopted a Participatory Action Research (PAR) design, aiming to involve individuals with visual impairments in the co-creation of sensory agritourism experiences in a rural setting. The process included three core phases: (1) Inventory Design, (2) Design of Sensory Activities, and (3) Simulation,

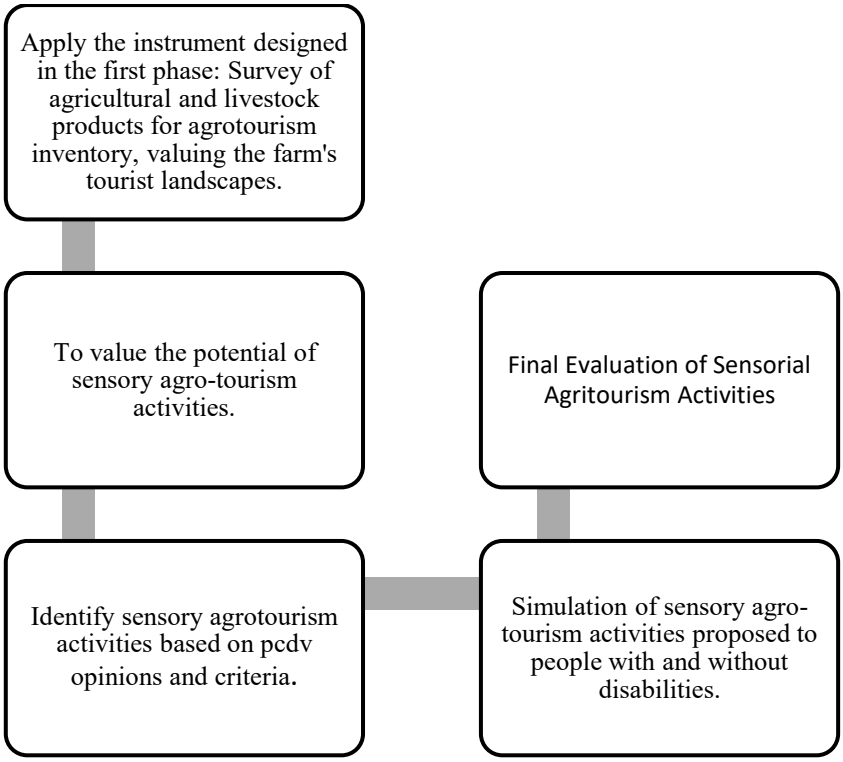
Validation, and Feedback. Each phase incorporated direct engagement with participants, emphasizing collaborative reflection and iterative development of inclusive tourist experiences.

Table 1. Phases, Procedure, and expected results

Phase/ Participants	Procedures	Expected Results
Inventory Design/ Project Authors.	1. Definition of the instrument.2. Data collection using the designed instrument.	Application of the Agricultural and Livestock Product Survey Instrument to assess tourism landscapes for farms, ranches, and estates.
Design of Sensory Activities/ 7 people with visual impairments + Project authors.	1. Evaluation of the potential of sensory agritourism activities.2. Identification of activities through the input of individuals with visual impairments.	Sensory agritourism activities co-designed with the target population.
Simulation and Validation/ 17 people (7 with disabilities, 10 without disabilities) + 3 teachers + 7 guides	1. Simulation of proposed activities with visually impaired and non-disabled individuals. 2. Final evaluation and methodological validation.	Validated and reliable methodology adapted to inclusive tourism.

Source: Authors.

Figure 1 Methodological Phases



Source: Own elaboration. The methodological process developed between April 2022 - February 2023.

2.1 Study Area

The present study was carried out at the Self-Sustaining Integrated Farm of the Technical University of Babahoyo (UTB), located at kilometer 5.7 on the road to Montalvo, in the province of Los Ríos, Ecuador. This farm functions as an applied learning environment aimed at strengthening the practical training of UTB students, particularly those enrolled in programs related to agriculture, livestock management, agro-industry, and rural tourism.

The facility hosts a variety of hands-on educational activities, including short-cycle and perennial crop cultivation, livestock management, agro-industrial processing, and agrotourism guidance and interpretation. These activities contribute to the development of technical skills and support interdisciplinary approaches to sustainable rural development

1. Results and Discussion

3.1 Phase 1 Result: Sensorial Agritourism Inventory

An instrument was designed and applied to inventory the agricultural and livestock elements of the farm to identify potential agritourism circuits within the property. The data obtained are presented below:

Table 2 Survey instrument for agricultural and livestock products for agrotourism inventory valuing tourist landscapes for farms, estates, and farmsteads.

Name of Survey Technician:	*Name of data collector*
Name of Facilitator/Farmer:	Name of person providing the information Mr. Publio Contreras Pazmiño
Age of facilitator/farmer:	57 years
Assigned name of the survey site:	Self-sustainable Integral Farm of the Universidad Técnica de Babahoyo
1. **Size and distance**	
1.1. Extension (km2)	60 hectares
1.2. Unproductive land (km2)	In constant production
1.3. **Distance between the main cities (km2)**	20 minutes (10.2 km)
Background of the Productive Land.	
1.1. is this a former mining area?	Yes, it used to be an old exploitation zone, there was a hacienda called San Pablo and they had a sugar cane plantation.
2.2 Have you had flooding problems?	The farm is located in a flood zone because it is surrounded by the Babahoyo River.
1.3 Type of Production: Mixed/Organic/Organic/Conventional	Production is mostly organic but conventional production is also used. It is mixed.
1.4 Faculties operating on the sustainable farm for learning - teaching:	FACIAG (All the careers of the faculty) FCJSE (Tourism Career)

	Features		Total of Crops	Hectares	Observation
3. Landscape Agricultural	Type of production and Surface dedicated to:	3.1. Fruits	13	11/2 H	The field has living barriers.
		3.2. Vegetables	14	2 H	The field has living barriers.
		3.3. Greenhouse-grown vegetables	-		
		3.4. Dried pulses	1	50h	
		3.5. Cereals	2	8 p.m.	The field has live barriers.
		3.6 Forage	4	45h	The field has a ditch as a barrier.
		3.7 Corn	1	5 hours	The field has a ditch as a barrier.
		3.8 Cocoa	1	2 hours	
		3.9 Banana	1	2 hours	
		3.10 Rice	1	1h	

	Features		OK	NO	Units
4. Landscape Agrarian	Type of production and Surface area dedicated to:	4.1 Cattle	X		3
		4.2. Goats	X		2
		4. 3 Sheep	X		2
		4.4. Equine Cattle	X		5
		4.5. Poultry Laying Hens	X		Each cycle produces between 50 to 100.
		4.6 Poultry Quail	X		Each cycle produces between 50 to 100.
		4.7 Rabbit farming	X		Between 20 to 50. It is not produced continuously.
		4.8 Production of Guinea pigs	X		Between 20 to 50. It is not produced continuously.
		4.9 Beekeeping		X	
		4.10 Fish farming	X		the capacity of the pond for fry is approximately 5000.

5. Agricultural Products Detail.

Common name	Scientific name	Cycle	Harvest Time	Uses	Production Quantity
Breadfruit	Artocarpus altilis	Short	5 months	Edible	Unlimited
Papaya	Carica papaya	Perennial	5 months	Edible	
Pitajaya	Selenicereus Updates	Perennial	3 months	Edible	10-12 for bush.
Sapote	Pouteria sapota	Short	3 years	Edible	
Guava	Psidium guajava	Short	2 months	Edible	3 to 4 fruits per
Cherry	Prunus subg. Cerasus	Short	3 months	Edible	branch
Pechiche	Vitex gigantea	Short	3 months	Edible	Unlimited
Avocado	Persea americana	Short	4 years	Edible	
Nicaragua	Averrhoa	Perennial	3 months	Edible	Unlimited
Orange	Citrus X sinensis	Perennial	3 years	Edible	
Araza	Eugenia stipitate	Perennial	2 years	Edible	Unlimited
Pomarrosa	Syzygium jambos	Perennial	5 years	Edible	Unlimited
Soursop	Annona muricata	Perennial	16-25 months	Edible	Unlimited

6. Detail of Medicinal and Aromatic Plants.

Common name	Scientific name	Cycle	Crop detail	Harvest Time	Observation
Turmeric	palillo o turmeric	Continuous production	Organically grown	9 months	Edible and medicinal
Paico	Dysphania ambrosioides	Continuous production	Organically grown	2 months	Medicinal
Insulin	Costus Igneus	Continuous production	Organically grown	25 days from	Medicinal
Oregano	Origanum vulgare	Continuous production	Organically grown	Sowing	Edible and medicinal
Cane	Arundo donax	Continuous production	Organically grown	1 year and	Medicinal

Ginger	Zingiber officinale	Continuous production	Organically grown	Half	Edible and medicinal
Lemon verbena	Aloysia citrodora	Continuous production	Organically grown	8 months	Medicinal
Dead Rose	Tagetes erecta	Continuous production	Organically grown	5 months	Medicinal
Rue de gallinazo	Graveolens route	Continuous production	Organically grown	2 months	Medicinal uses and curative applications
Air leaf	Bryophyllum Pinnatum	Continuous production	Organically grown	1 month	Edible and medicinal
Castile Street	Graveolens route	Continuous production	Organically grown	1 month	Medicinal
Insulin	Costus Igneus	Continuous production	Organically grown	25 days from sowing	Medicinal
Dulcamara	Solanum Dulcamara	Continuous production	Organically grown	Sowing	Medicinal
Aloe vera	Aloe	Continuous production	Organically grown	1 month	Medicinal, facial facial
Peppermint	Mentha spicata	Continuous production	Organically grown	2 months	Edible and medicinal
Basil	Ocimum basilicum	Continuous production	Organically grown	25 days	Edible and medicinal

7. Use of fertilizers used in agricultural production.		
Type of fertilizer	**Fertilizers Used**	**Used Pesticides**
Organic	Compost, rock phosphate, Bocashi, Manure Tea.	Garlic, chili, lemon and onion extracts. Guanto and kidney tomato
Conventional	Urea	Mancozeb

	Tourism Valuation			
	Activities	**Current**	**Potential**	**Observation**
Recreational tourism activities of the site according to agrarian, agricultural and rural landscapes	Learn about farm animal husbandry	X		Activity is carried out with students at present
	Learn about fish farming	X		Activity is carried out with students at present
	Participate in farm animal husbandry activities	X		Activity is carried out with students at present
	Learn about planting fruits, vegetables, etc	X		Activity is carried out with

				students at present
	Learn about medicinal and aromatic plants.	X		Activity is carried out with students at present
	Participate in the planting and harvesting of agricultural products.	X		Activity is carried out with students at present
	To learn about the elaboration of organic fertilizers.		X	
	Learn and participate in chocolate making.		X	
	Learn and participate in cheese making.		X	
	To learn and participate in the elaboration of flour.	X		Activity is carried out with students
	Learn and participate in the elaboration of jams.	X		Activity is carried out with students
	Participate in cycling activities.	X		Activity is carried out with students
	Hiking on the farm.	X		Activity is carried out with students
	Hiking through fruit trees area		X	
	Rural photography	X		Activity is carried out with students
	Inclusive agrotourism guide		X	
	Learn how to make accessible agrotourism scripts.		X	

Source: Result of field research in the application of the instrument designed for this purpose.

3.2 Phase 2 Result: Participation–Action for the Assessment of the Sensorial Potential of Agritourism Activities

Following the implementation of the inventory instrument, the main agricultural and livestock components of the Self-Sustainable Integrated Farm were identified to delineate potential agritourism circuits within its premises. To assess the sensorial potential of the agritourism activities, three fundamental criteria were established:

1. Accessibility to the location where the activity would take place.
2. Proximity or spatial continuity between circuits.
3. Sensorial richness, understood as the presence of stimuli related to touch, smell, taste, or hearing that contribute to the experiential value of the activity.

Table 3 presents the assessment of a range of agritourism activities based on these criteria, drawing from field observations and the active participation of individuals with and without visual impairments.

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Table 3 Assessment Table of Agro-tourism Activities with Sensory Potential

Criteria / Activity	Accessibility		Proximity		Sensoriality	
	OK	NO	OK	NO	OK	NO
Learning about farm animal husbandry.		X		X	X	
Learn about fish farming.	X		X		X	
Participate in farm animal breeding activities.		X		X	X	
To learn about planting fruits, vegetables, etc.		X		X	X	
Learning about medicinal and aromatic plants.	X		X		X	
Participate in the planting and harvesting of agricultural products.		X		X	X	
Learn about the elaboration of organic fertilizers.		X		X	X	
Learn and participate in the elaboration of chocolate.		X		X	X	
Learn and participate in the elaboration of cheese.		X		X	X	
Learn and participate in the elaboration of flour.		X		X	X	
Learn and participate in the elaboration of jams.		X		X	X	
Participate in bike walking activities.	X		X		X	
Hiking on the farm.		X	X		X	
Hiking in the fruit tree area.	X		X		X	
Rural photography		X	X			X

Source: Authors.

Based on the results obtained, four recreational agritourism activities were identified as meeting all three established criteria under the current conditions of the farm:

1. Learning about fish farming (pisciculture).
2. Learning about medicinal and aromatic plants.
3. Participating in cycle-tour activities.
4. Hiking in the area of fruit trees.

Following this selection, the specific zones within the farm where the sensorial activities would be implemented were geographically delineated, as a preliminary step toward their simulation and methodological validation.

Figure 3 Map of the Agro-tourism Sensory Activities Trail.

Source: Google Maps. Prepared by the authors

Once the route for the "Sensorial Agritourism Activities Trail" was defined, the design of the activities was carried out by integrating the opinions and feedback of individuals with visual impairments. Seven students with visual disabilities, along with the authors of the research project, participated in this process by walking the proposed route. At each stop along the trail, sensorial activities were collaboratively developed. To protect participants' anonymity, each student was assigned an identification number. However, those who explicitly authorized the use of their image were included in the photographic documentation. Below is a detailed breakdown of the designed activities according to the senses involved, along with verbatim statements that reflect the participants' perspectives and evaluations:

Table 4. Design of Sensorial Agritourism Activities Based on the Opinions and Feedback of Individuals with Visual Impairments.

Trail Area	Agrotourism Activities	Description of activities
Tilapia Zone	Learning about Fish Farming.	• Touch: In this area, there are pools of fry pools of different sizes. Participant 1 mentioned that the activity of being able to have a container to put her hand in seemed like an interesting idea and that the tingling sensation generated laughter. Participants 2 and 3 agreed

		that this activity should be done after listening descriptively to the characteristics of tilapia and their fry. Participants 5 and 6 mentioned that they prefer to visit only one pond and not tour the nine ponds at the site. Participant 7 expressed that she did not like the idea of putting her hand in the pond, but suggested that when explaining the tilapia in its adult state, a dead fish should be present to touch its scales or make a model to determine its weight and texture, although she liked the idea of the dead fish better. • Smell: Unanimously, participants mentioned that they can easily smell the feed eaten by the fry. • Taste: Participants 2 and 6 mentioned that while talking about adult tilapia, it is possible to taste a few bites of grilled tilapia. • Hearing: Participants 3 and 5 mention that the ponds generate noise when water falls into them. Participants 1 and 7 mention that when guiding, the tour guide should communicate each movement in advance and tell them the location of everything by telling them from left to right where each person or object is located.
Nursery Area	Learn about medicinal and aromatic plants.	• Touch: In this area there are medicinal and aromatic plants. Participant 1 mentions that on the trail the blind person is better directed if he/she walks half a step behind the guide, so that when he/she perceives the movements up or down, he/she has time to imitate them, she also describes. Participant 2 mentions that as soon as the path starts with touch, it is done by walking and that it would be interesting to place different textures on the path, for example, sparkling stones, granite, grass, dry leaves with dirt but without holes and free of humidity. Participant 3 also noted that the path could have pavers made of recycled material such as glass. Participant 4 mentioned that for medicinal plants it is important to describe the shape of the leaf whether it is cylindrical, oval or round. Participant 5 mentions that the texture of the plant is important to describe if it has a thorn, if it is hairy, if it is rough, if it is slippery or smooth. He mentions that touching leaves and plants is a form of interaction. • Smell: Participant 6 mentioned that smelling each medicinal plant is a pleasant sensation, that there are some that have sweet and spicy smells. Participant 7 mentioned that it would be interesting to be able to have aromatic flowers in the nursery. • Taste: Participants unanimously mentioned that a variety of aromatic water can be offered with the same plants as the site. • Hearing: 1 and 4 mentioned that they heard the birds at the site that this sound was very pleasant and that they would like a description of the birds that usually go to the site to recognize their whistles.
Fruit Growing Area	Hiking through fruit tree area	• Touch: Participant 3 mentions that in the fruit growing area they would like to feel the trunk, leaf of the tree, even hug the tree to perceive if it is wide, thin or thick, touch the fruits and try as much as they can to take the fruit with their hands from the tree. That they prefer fruits that are easy to pick and find. The texture and shape should be described in detail. Participant 4 says not to be afraid to mention the colors of the fruits because for those who have a high percentage of disability, they like to imagine the color of the fruit.

		• Smell: Participant 7 mentions that there are trees that have strong scents such as orange and lemon, which she liked to smell. • Taste: Participant 5 said that tasting the fruits is the best thing about the trail. Participant 1 said that you can taste jams made from fruits native to the province. • Hearing: Participants 2 and 6 mentioned that they also heard birds, and that it was pleasant to hear the sound of the dry leaves on the trees, and that they also heard a trickle of water and that this sound was pleasant.
Route between zones.	Participate in cycle walking activities.	• For this activity, there were 2 tandem bicycles (two-person) that are part of the linkage project articulated to the research project. For the use of the bicycle only 2 people with disabilities participated, accompanied by the guides who handled the bicycles so that people with disabilities could express their opinions about this activity: Participants 2 and 3 are two brothers with disabilities who voluntarily got on a bicycle for the first time in their lives. Their opinions were as follows: ✓ Participant 2: I liked to feel for the first time a sense of freedom to feel the wind, even as I heard the wind, but it was tiring to move because obviously I was pedaling too. ✓ Participant 3: I think that between one point to another within the trail there should be an exclusive place to pedal the bicycle because I heard cars or motorcycles and that scared me; although if you ask me if this activity should be included I say yes because for anyone to ride a bicycle is surely easy but I never could, nor knew how it was and then to experience it was exciting.

Source: Field work and meeting between students with disabilities and project authors.
The following table presents Table 5 summarizes the sensory engagement involved in each of the designed sensorial agritourism activities:

Table 5 Use of senses by recreational activity at the Self-Sustainable Integrated Farm.

Senses / Agrotourism Activities	Touch	Taste	Smell	Hearing
Learn about medicinal and aromatic plants.	X	X	X	X
Learning about Fish Farming.	X	X	X	X
Hiking through fruit trees area	X	X	X	X
Participate in cycling activities.	X		X	X

Compiled by the authors

3.3 Phase 3 Result: Simulation, Validation, and Methodological Adjustment

The third phase of the study materialized the participatory action stage of the PAR (Participatory Action Research) methodology through the implementation of the previously designed sensorial agritourism activities. This simulation not only served to validate the proposed experiences but also reaffirmed the active role of participants as agents of transformation, in alignment with the core principles of PAR: to know, to act, and to transform through shared knowledge.

A sensory simulation session was organized with the participation of 17 individuals, including 7 students with visual impairments (all certified by CONADIS), 3 tourism specialist professors, and 7 students without disabilities, who were blindfolded to experience the activities from an inclusive sensory perspective. This activity was integrated into the outreach project "Tourism at the Self-Sustainable Integrated Farm of UTB: Experiencing Tourism through the Eyes of the Soul," reinforcing the component of community and educational integration.

Seventh-semester Tourism students acted as facilitators and sensory guides, providing personalized support to each participant. Operational groups were organized as follows:

- **Group A**: 1 professor, 2 individuals with visual impairments, 2 individuals without disabilities — 5 participants + 5 guides.
- **Group B**: 1 professor, 3 individuals with visual impairments, 2 individuals without disabilities — 6 participants + 6 guides.
- **Group C**: 1 professor, 2 individuals with visual impairments, 3 individuals without disabilities — 6 participants + 6 guides.

Fulfilling the collaborative evaluation phase of PAR, a participatory meeting was held after the simulation to collectively reflect, assess the sensory activities, and gather suggestions. This session allowed for the validation and refinement of the methodology based on the perspectives of the participants themselves, integrating their contributions into the next phase of the R&D+i project: "Sensorial Agritourism at the UTB Integrated Farm: Designing Guidance Based on Sensory Perception and a Promotional Website."

The active participation of individuals with visual impairments—ranging in age from 18 to 38, with gender parity—demonstrated a high level of ownership of the process and legitimized the co-construction approach to knowledge. Participants without disabilities, both men and women, also expressed strong appreciation for the experience from an empathetic and transformative perspective.

Below is Table 6, presenting the recorded levels of satisfaction. An evaluation scale from 1 (minimum satisfaction) to 5 (maximum satisfaction) was used, and the following abbreviations were applied to ensure anonymity:

- **Pcdv**: Person with visual impairment
- **Pax sin Disc.**: Person without disability
- **Pax esp. Tur.**: Tourism Specialist

Table 6 Summary of Evaluation of the sensory agro-tourism activities experienced at the UTB Self-Sustainable Integrated Farm.

Activities / **Participants**	Learning about medicinal and aromatic plants.	Learning about Fish Farming.	Hiking through fruit trees area	Participate in cycling activities
Pcdv 1	5	5	5	4

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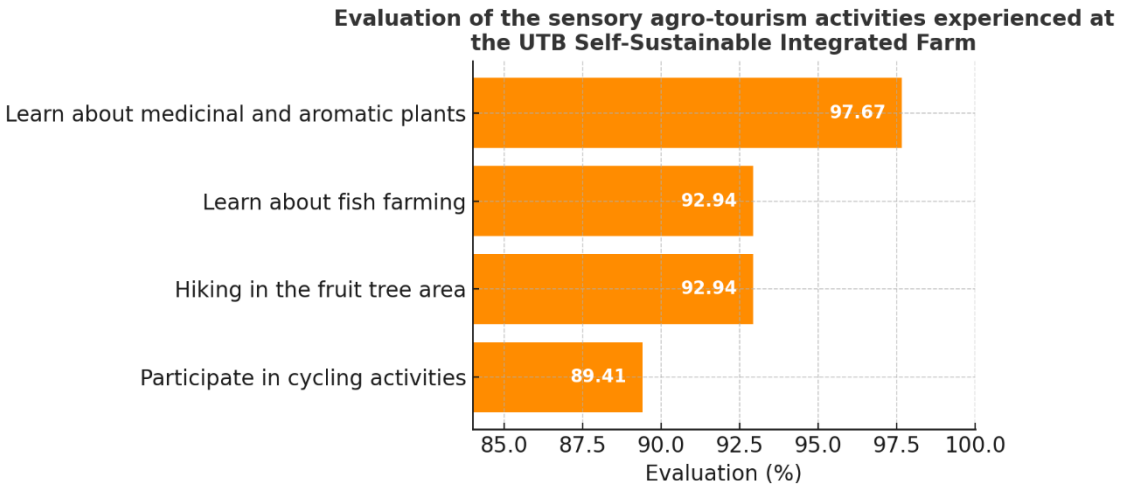
Pcdv 2	5	5	5	5
Pcdv 3	5	5	5	4
Pcdv 4	5	5	3	5
Pcdv 5	5	5	5	5
Pcdv 6	5	5	4	5
Pcdv 7	5	2	5	3
Pax with no Disc 1	5	4	5	5
Pax with no Disc 2	5	4	5	5
Pax with no Disc 3	5	5	4	5
Pax with no Disc 4	4	5	5	3
Pax with no Disc 5	5	5	5	4
Pax with no Disc 6	5	5	5	4
Pax with no Disc 7	5	5	3	5
Pax esp. Tur 1	4	4	5	5
Pax esp. Tur 2	5	5	5	5
Pax esp. Tur 3	5	5	5	4
Punctuation	**97.67**	**92.94**	**92.94**	**89.41**

Source: Project authors.

Figure 8 Statistical graph of the evaluation of the sensory agro-tourism activities.



Source: Project authors.

3.4 Results Analysis: Evaluation of Sensorial Activities

The chart titled "*Evaluation of Sensorial Agritourism Activities Experienced at the UTB Self-Sustaining Integrated Farm*" displays the average satisfaction level, expressed as a percentage, for the four sensorial activities implemented during the simulation and methodological validation phase. The results reflect a high overall satisfaction with the sensory experiences among participants, both with and without visual impairments, validating the relevance and effectiveness of the methodological design based on the Participatory Action Research (PAR) approach. Key findings are detailed below:

- The highest-rated activity was "Learning about medicinal and aromatic plants," with a satisfaction score of 97.67%. This result highlights the strong sensory connection generated by plants through smell and touch, as well as their educational and cultural value in rural contexts.

- "Hiking among fruit trees" and "Learning about fish farming" both followed closely with 92.94%, indicating a balanced positive perception of these activities, which combine movement, exploration, environmental engagement, and meaningful learning.
- Although slightly lower in score, "Participating in cycle-tourism activities" received a solid 89.41%, suggesting good overall acceptance, though potentially limited by factors such as physical accessibility or the physical effort required.

The results of this study demonstrate the methodology for the design of sensory experiences in farms, ranches or open spaces through agrotourism activities with elements of the site, considering the concept of inclusion as a transversal axis in each phase of the study, with visually impaired people being the co-creators of the design of sensory activities. This document is the first step in the creation of an inclusive agrotourism guide based on the perception of the senses, as this methodology contributes significantly to the subsequent design of descriptive scripts for people with visual impairment.

In line with the Latin American critical tourism approach proposed by Landeta-Bejarano et al. (2025), it can be argued that the touristic exclusion of certain groups—whether based on gender or disability—responds to historical patterns of symbolic invisibility. Integrating the design of inclusive sensorial experiences allows for the redefinition of rural tourism as a space of rights rather than mere consumption. In this sense, the results achieved in the study are supported by previous research such as those carried out by authors like Guanghui Qiao, et al. (2023) and Kastenholz et al. (2015), studies that analyzed the importance of making recreational activities accessible and how to achieve a deep tourism experience in people with visual impairment is necessary sensoriality in the practice of tourism activity through the use of the other senses in the absence of sight.

The authors Zajadacz & Lubarska (2019) mention the importance of safe outdoor places for people with visual impairment, having adequate signage with a Braille system, varying surface and width, as well as considering key places that emanate sounds that serve as stimuli for the sense of hearing, this study cited supports the research result as within the methodology designed people with disabilities mentioned these aspects relevant to them, therefore validates the importance that the present study has counted as co-creators to the main beneficiaries.

Olaya et al. (2024) assert that tourism should be regarded as a human right, social right equivalent to health, housing, and education. A population with access to recreation, leisure, and tourism is, according to their argument, a healthier society, free from tension, depression, chaos, and violence. Therefore, tourism accessibility becomes a means to ensure that individuals have the same opportunities and rights as people without disabilities.Inclusive agritourism is conceptualized as the design of accessible tourism experiences aimed at both individuals with disabilities (visual, auditory, physical, organic, and intellectual) and those without. Its primary objective is to ensure barrier-free tourism services that offer quality, safety, and comfort in rural settings such as farms, estates, and agricultural holdings. Within this framework, bodily sensoriality (understood as a holistic capacity that integrates all senses and modes of environmental perception) emerges as a critical component in planning truly inclusive experiences. Incorporating this sensory dimension allows for the development of activities that stimulate touch, hearing, smell, and taste, thereby transcending the traditionally visual-centric approach. In doing so, agritourism enhances its recreational, pleasurable, and emotional value, fostering well-being, social inclusion, and equity in access to rural leisure opportunities.In this context, the application of the Participatory Action Research (PAR) methodology not only validated the inclusive design of the proposed activities but also allowed for a deeper exploration of an emerging category with strong theoretical and practical potential: applied sensoriality. This concept refers to the conscious, planned, and adapted use of the senses (especially those beyond sight) as a primary channel for tourist interaction. In rural contexts, where soundscapes, the scent of the soil, and the texture of crops are part of the intangible heritage, sensoriality becomes a strategic tool to democratize access to tourism experiences.

The design of activities that stimulate smell, taste, hearing, and touch, as demonstrated in this study, aligns with an ethic of care and equity, recognizing that the right to leisure and tourism must also be

exercised through bodies that perceive and experience the world differently. In this way, applied sensoriality not only enriches the visitor's experience but also serves as a tool for social transformation, capable of fostering inclusion from the very outset of tourism planning. Consequently, its integration into public policies and sustainable rural development models should be prioritized in order to advance toward truly inclusive tourism for all, in alignment with the Sustainable Development Goals (SDGs) and international human rights frameworks.

Applied sensoriality in rural tourism not only expands the traditional notion of accessibility but also redefines the role of the body as a mediator of knowledge and pleasure.

4. General Conclusions

This exploratory study, developed under the framework of Participatory Action Research (PAR), demonstrated the feasibility of designing inclusive sensorial agritourism experiences through the active involvement of people with visual impairments in rural settings. The application of a participatory methodology allowed for the identification, validation, and refinement of activities based on the use of senses other than sight, reinforcing the link between accessibility, social inclusion, and territorial sustainability. The implementation of the project phases at the Self-Sustainable Integrated Farm of the Technical University of Babahoyo not only revealed the sensorial potential of specific agricultural activities but also highlighted the need to reconceptualize the tourism experience from a multisensory, empathetic, and transformative perspective.

4.1 Managerial Implications

At both operational and strategic levels, the findings provide a practical guide for tourism managers, local authorities, and rural enterprises seeking to implement accessible and inclusive tourism products. The need to incorporate sensorial accessibility criteria in territorial planning is emphasized, based on the principles of universal design and tourism for all. The experience developed shows that the participatory approach not only enhances service quality but also strengthens community cohesion and sense of belonging, generating positive impacts on the rural economy and the destination's image. This contributes directly to the achievement of the Sustainable Development Goals, particularly SDG 5 (gender equality), 8 (decent work), 10 (reduced inequalities), and 11 (sustainable cities and communities).

4.2 Theoretical Implications

This study contributes to the construction of an epistemology of inclusive tourism from rural margins, challenging the ocularcentric paradigms prevailing in tourism literature. By integrating the paradigm of sensorial accessibility and active participation, a new analytical category for designing experiences in agritourism is proposed—one based on meaningful interaction with the environment through the senses. The empirical validation of the PAR methodology supports its potential as a tool for social transformation and as a means to make visible those historically excluded from leisure and recreational spaces. Moreover, the experience is transferable and adaptable to other forms of disability, opening new lines of inquiry within the field of tourism justice.

4.3 Limitations and Future Research Directions

The main limitations of this study include the small sample size, the focus on a single case study, and the logistical challenges in recruiting a larger number of participants with visual impairments. These aspects restrict the generalizability of the findings, although not their contextual and methodological validity.

Future research is encouraged to replicate and adapt the methodology in other rural territories with diverse geographical, productive, and socio-cultural characteristics. Furthermore, it is recommended to extend this experience to other types of disability—physical, intellectual, or psychosocial—by evaluating the

effectiveness of sensorial experiences across different user profiles. These investigations will contribute to the development of more inclusive, resilient, and transformative public policies and tourism practices.

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