

# From Aerial Offshoot to Living Heritage: Date-Palm Root Induction as a Circular Tourism Practice in Minab, Iran



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## Abstract

Traditional date-palm management in Minab, Hormozgan Province, Iran, includes locally embedded practices that can support agricultural continuity, heritage interpretation, and place-based tourism. This short communication examined the assisted rooting of aerial date-palm offshoots as a form of living agricultural heritage. An exploratory case study design combined observations of three propagation cases, interviews with 12 stakeholders, a participatory co-design workshop with 10 participants, and a qualitative feasibility assessment. The Living Heritage Circularity Framework evaluated biological retention, material circularity, knowledge continuity, visitor learning, and local value retention. Results showed strong potential for biological retention, knowledge continuity, visitor learning, and farmer control, while material circularity and economic contribution remained dependent on water use, compensation, and benefit-sharing arrangements. Stakeholders preferred a small-scale, farmer-led, modular visitor experience that avoided interference with agricultural work. The study concludes that this practice can support tourism and leisure management in Minab when implementation remains seasonal, locally governed, agriculturally compatible, and voluntary.

**Keywords:** Minab; Date palm; Living agricultural heritage; Circular tourism; Agritourism; Local knowledge; Hormozgan

## Introduction

Date-palm groves are productive cultural landscapes shaped by arid environments, cultivated biodiversity, farming knowledge, and local livelihoods. Traditional agricultural systems can retain ecological functions and place-specific knowledge while expressing social identity and cultural value [1]. This makes palm groves relevant to heritage-based tourism that interprets living practices rather than treating agricultural landscapes as static scenery. The issue is particularly important in Minab, where date-palm cultivation remains a visible component of the local landscape and rural economy.

Date palm (*Phoenix dactylifera* L.) is commonly propagated through offshoots because seedlings do not reliably retain the agronomic characteristics of the mother palm. However, aerial offshoots may develop with inadequate roots and face high transplant risk after premature separation [2,3]. In the Minab practice examined here, farmers place moist soil around the

offshoot base, secure it with cloth, and maintain moisture until roots develop. The technique is therefore more accurately described as assisted root induction than as the regeneration of an aging palm.

This practice offers a focused basis for examining circularity in a working agricultural landscape. Its contribution depends not only on retaining viable plant material but also on sustaining local knowledge, limiting additional resource use, and keeping interpretive and economic value within the community [1,4]. Regenerative tourism research similarly emphasizes place-based governance, community participation, and locally controlled benefits [5-7].

While agricultural heritage tourism typically emphasizes landscapes, products, festivals, and branding, it often overlooks small cultivation processes as visitor experiences. This study therefore asks how assisted aerial-offshoot rooting in Minab

can support farmer-led tourism without weakening agricultural function, cultural integrity, or local ownership. It introduces the Living Heritage Circularity Framework to connect biological retention, agricultural knowledge, visitor learning, community governance, and locally retained value.

### Minab Case Study and Date-Palm Propagation Practice

The case study was conducted in Minab, Hormozgan Province, southern Iran, within one of the country’s principal date-growing regions. Date-palm cultivation contributes to agricultural production, rural livelihoods, and the spatial identity of cultivated settlements in Minab, while previous agronomic research has confirmed the continuing importance of date-palm management to local development [8]. The palm groves were treated not only as fruit-production sites but also as working cultural landscapes maintained through irrigation, pollination, pruning, harvesting, offshoot management, material reuse, and seasonal knowledge. These interconnected practices provided a relevant setting for examining how agricultural knowledge could support locally managed tourism and leisure activities centered on learning rather than passive landscape consumption.

The study focused on the assisted rooting of aerial date-palm offshoots before their separation from the mother palm. Date palms are dioecious, and seedlings do not reliably retain the agronomic characteristics of the parent plant. Vegetative propagation through offshoots is therefore preferred because it preserves cultivar identity, fruit quality, and predictable sex [9,3]. Unlike basal offshoots, aerial offshoots emerge above the soil and may possess few functional roots, making premature separation vulnerable to desiccation and transplant failure.

In the observed Minab practice, farmers placed moist soil or another locally available rooting medium around the base of an aerial offshoot while it remained attached to the mother

palm. Cloth or a comparable material held the medium in place, and farmers periodically applied water until adventitious roots developed. The rooted offshoot was then detached and transplanted. The procedure was therefore interpreted as in situ root induction rather than the revival of an aging or unproductive palm [3].

Three propagation cases were documented through direct observation, sequential photography, field notes, and interviews with participating farmers. Documentation covered the mother-palm variety and approximate age, offshoot position, rooting and wrapping materials, watering frequency, rooting duration, separation, transplantation, labor requirements, visible survival, and farmer-reported reasons for using the method. Local terminology and explanations were also recorded. The practice was relevant to tourism because its visible stages could communicate plant propagation, farmer skill, resource retention, and orchard continuity. However, the study did not assume that the technique was ancient, unique to Minab, representative of all local farmers, or inherently circular. The case boundary was limited to the observed procedure, participating knowledge holders, selected grove settings, material inputs, and its potential interpretation as a small-scale local visitor experience.

### Methodology

This study used an exploratory embedded case-study design to examine how the assisted rooting of aerial date-palm offshoots could be interpreted as a farmer-led tourism and leisure experience in Minab, Hormozgan Province, Iran. The unit of analysis was not the propagation technique alone, but the relationship among agricultural knowledge, cultural meaning, visitor interpretation, local control, and potential tourism value. The research process integrated field documentation, stakeholder interviews, tourism experience co-design, and feasibility assessment Figure 1.

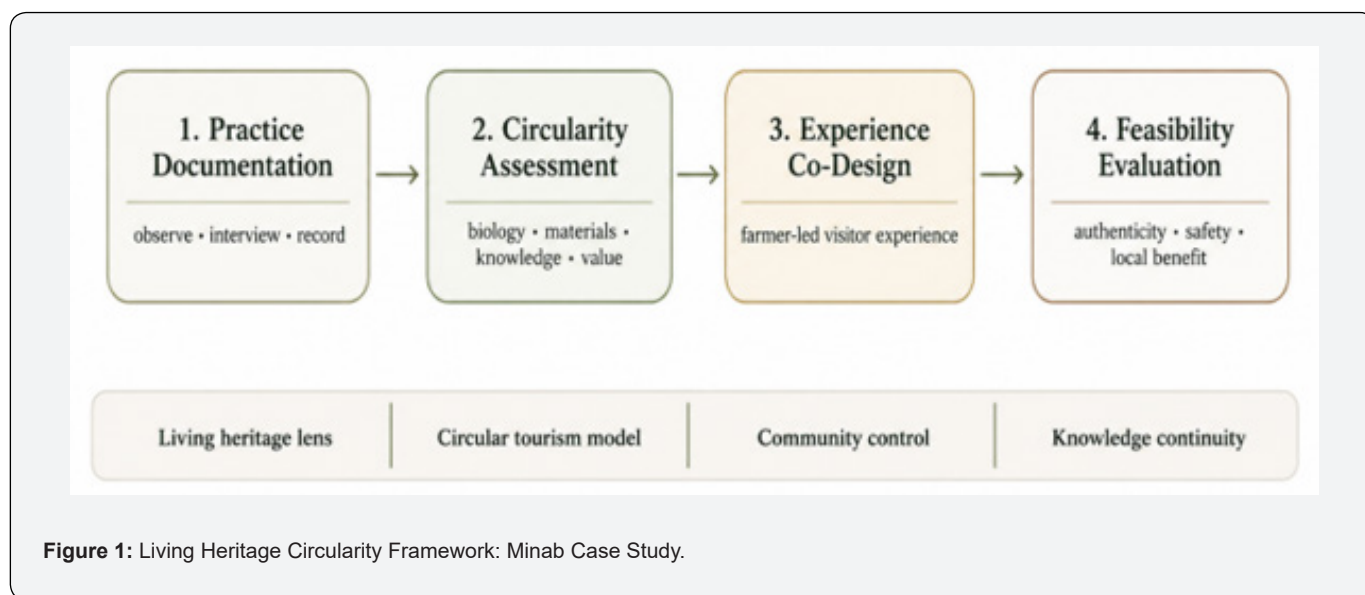


Figure 1: Living Heritage Circularity Framework: Minab Case Study.

Fieldwork was conducted in selected palm groves in Minab. Three cases of aerial-offshoot rooting were documented through direct observation, photography, and field notes. The documentation focused on the visible stages of the practice, the role of the farmer, the materials used, the timing of root formation, and the aspects that could be interpreted safely for visitors. Twelve stakeholders were selected purposively, including experienced palm farmers, younger family members involved in grove management, agricultural specialists, community knowledge holders, and local tourism or cultural actors. The interviews examined the local meaning of the practice, knowledge transmission, its perceived cultural value, suitable tourism narratives, visitor access, seasonality, risks, and acceptable forms of participation [10].

Interview and observational data were analyzed through reflexive thematic analysis. Coding focused on five tourism-related themes, including heritage interpretation, visitor learning, farmer authority, local value creation, and environmental and cultural safeguards. Technical agricultural information was included only where it supported the interpretation of the practice as a tourism resource. The analysis distinguished directly observed evidence from participant accounts and researcher interpretation [11].

The Living Heritage Circularity Framework (LHCR) was then applied to assess five interconnected dimensions, including retention of viable plant material, use of local or reusable materials, continuity of agricultural knowledge, capacity for visitor learning, and retention of decision-making and economic value within Minab [1,5,6,12]. Each dimension was assessed as weak, moderate, or strong using field evidence and stakeholder explanations. The scale was used as a qualitative decision-support tool rather than as a standardized circularity index.

A participatory co-design workshop was conducted with 10 stakeholders. Participants developed a small-scale visitor experience around the documented practice and defined its learning objective, seasonal timing, group size, farmer role, acceptable visitor behavior, and links with local food, crafts, markets, walking activities, and school education. The visitor journey was mapped from arrival to departure, identifying interpretation points, responsible local actors, required materials, possible revenue sources, and environmental or cultural risks. Activities that could damage palms or disrupt farming, including climbing, cutting, detaching offshoots, and handling active rooting packages, were excluded [13].

The proposed experience was evaluated against six criteria, including agricultural compatibility, cultural integrity, visitor learning value, farmer control, environmental safety, and local economic contribution. Stakeholders scored each criterion on a five-point scale and discussed differences in judgment. Credibility was strengthened through triangulation of observations, interviews, photographs, and workshop results, followed by participant validation. All participants provided informed consent, and the study treated knowledge ownership, photography, access, compensation, and benefit sharing as essential conditions for any

future tourism implementation.

### Results and Discussion

Field observations in three Minab palm groves confirmed that the assisted rooting of aerial date-palm offshoots followed a recognizable sequence of offshoot selection, wrapping, moisture maintenance, root monitoring, separation, and transplantation. In all observed cases, the offshoot remained attached to the mother palm during root induction, while moist soil or another locally available medium was secured around its base using cloth or comparable material. The practice therefore represented a knowledge-intensive cultivation process rather than a simple form of material reuse. Its gradual and visible progression also created an interpretable sequence through which visitors could understand plant propagation, farmer judgment, and orchard continuity without altering the agricultural procedure.

Thematic analysis of the 12 stakeholder interviews identified five connected dimensions: biological retention, material circularity, knowledge continuity, visitor learning, and local value retention. Biological retention received the strongest assessment because participants consistently described the technique as a means of preserving aerial offshoots that might otherwise fail after separation or remain unused. Knowledge continuity and visitor learning were also assessed as strong because the method depended on practical judgments concerning offshoot condition, moisture, timing, and transplant readiness, while its visible stages provided a clear basis for interpretation. Material circularity was assessed as moderate because locally available soil and wrapping materials were used, but the environmental contribution depended on responsible sourcing, reuse, and avoidance of unnecessary water consumption. Local value retention was likewise moderate because it depended on future agreements concerning farmer authority, compensation, access, ownership, and revenue distribution.

Table 1 synthesizes the results from practice documentation, framework assessment, experience co-design, and feasibility evaluation. The table connects the evidence collected at each methodological stage with the principal tourism-related findings and their qualitative assessment.

As Table 1 indicates, the tourism potential of the practice did not arise from the rooted offshoot alone. It emerged from the relationship among biological retention, farmer knowledge, visitor learning, and local control. The lower assessments for material circularity and local economic contribution indicated strong overall potential. Instead, they showed that these dimensions depended on operational arrangements extending beyond the propagation technique itself. Circularity therefore required more than retaining viable biological material. It also required responsible material and water use, continuity of knowledge, farmer authority, and local retention of economic benefits. This socially embedded interpretation is consistent with regenerative-tourism research emphasizing place-based governance and distributive justice rather than environmental improvement alone [14].

**Table 1:** Empirical results of the Living Heritage Circularity Framework in the Minab case study.

Analytical Stage	Evidence Base	Main Finding	Assessed Outcome
Practice documentation	Three observed propagation cases, photographs, field notes, and 12 stakeholder interviews	The technique followed a visible and consistent sequence that could be interpreted without modifying its agricultural function.	Strong interpretive potential
LHCF assessment	Observational evidence and stakeholder accounts across five dimensions	Biological retention, knowledge continuity, and visitor learning were strongest, while material and economic circularity depended on management conditions.	Biological retention: strong; material circularity: moderate; knowledge continuity: strong; visitor learning: strong; local value retention: moderate
Tourism experience co-design	Workshop with 10 stakeholders	Participants preferred a small, farmer-led educational experience rather than a standardized or high-volume attraction.	Small-group, modular, farmer-led format
Feasibility evaluation	Stakeholder assessment of six criteria	Agricultural compatibility, cultural integrity, farmer control, visitor learning, and safety were treated as prerequisites for implementation.	Agricultural compatibility: strong; cultural integrity: strong; visitor learning: strong; farmer control: strong; environmental safety: moderate to strong; local economic contribution: moderate

The co-design workshop translated these findings into a four-stage visitor journey consisting of a palm-grove introduction, farmer demonstration, guided interpretation, and local reflection and exchange. Participants rejected activities that could damage palms or interfere with agricultural work, including climbing, cutting, detaching offshoots, and handling active rooting packages. They instead supported observation of different propagation stages, interpretation by farmers or trained local residents, and demonstrations using noncritical materials. This format positioned the grove as an active production landscape first and a visitor setting second.

Participants also identified possible connections with local food, crafts, markets, walking activities, and school-based environmental education. However, they opposed combining these elements into a standardized tourism package. They preferred a modular structure because it allowed each farmer or household to determine which spaces, narratives, and activities to share. This finding reinforces the importance of farmer authority. Participation should not be reduced to farmers appearing in an externally designed attraction. Community support for heritage tourism depends on meaningful involvement, perceived benefits, institutional cooperation, and influence over decision-making [15,16].

The results further showed that cultural integrity did not require presenting the technique as unchanged or ancient. Its interpretive value derived from its current agricultural function and practical visibility. Living agricultural knowledge changes with materials, labor, environmental pressures, and production needs. Authenticity should therefore be evaluated through consistency with actual farmer practice rather than claims of historical purity. Any reconstructed display should be identified clearly as educational, and the knowledge of individual participants should not be presented as the collective tradition of all Minab farmers.

This distinction is important because tourism can alienate intangible heritage from practitioners when local practices are redesigned primarily for visitor expectations [17].

Feasibility depended on the interaction among agricultural compatibility, farmer control, cultural integrity, learning value, and safety. Visits were needed to follow irrigation and grove-management schedules, account for seasonal heat, and use routes that avoided channels, uneven surfaces, equipment, and active work areas. Small groups were preferred because they reduced disturbance and enabled direct interaction with knowledge holders. Farmers also required compensation for preparation, interpretation, and access. These conditions distinguish a farmer-led living-heritage experience from the superficial use of local knowledge as promotional content.

The findings remain exploratory. Three observed cases, 12 interviews, and one workshop cannot establish the historical origin or prevalence of the technique across Minab. The qualitative assessments should not be interpreted as standardized measures of circularity or tourism performance. No visitor pilot was conducted, so demand, learning outcomes, willingness to pay, farmer workload, operating expenses, and benefit distribution remain untested. The LHCF should therefore be understood as a structured basis for pilot implementation rather than evidence that the initiative is already circular, regenerative, or commercially viable.

**Conclusion**

This study demonstrates how a locally practiced date-palm propagation technique in Minab can be interpreted as living agricultural heritage and incorporated into tourism without detaching it from production. The LHCF provides the paper’s main contribution by linking biological retention, knowledge continuity, visitor learning, farmer authority, and local value

within one place-based assessment. The findings indicate that tourism potential depends less on infrastructure than on farmer-led interpretation, small-scale access, seasonal compatibility, and clear benefit-sharing arrangements. The case also shows that circularity in agricultural tourism should include the continuity of knowledge and community control, not only the reuse of biological or material resources. Before implementation, the proposed experience requires pilot testing to assess visitor learning, operational expenses, agricultural disturbance, safety, and local revenue retention. The framework may inform comparable initiatives elsewhere, but transfer should follow new field documentation and stakeholder co-design rather than direct replication.

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### References

1. Agnoletti M, Santoro A (2022) Agricultural heritage systems and agrobiodiversity. In *Biodiversity and Conservation* 31: 2231-2241.
2. Tayyab M, Ahmad S, Abbas MM, Khan MI, Aslam K, et al. (2021) Root Initiation in Aerial Offshoots of Date Palm (*Phoenix dactylifera*) by Exogenous Application of Auxins. *Journal of Applied Research in Plant Sciences* 2(2): 159-168.
3. Zaid A, Wet PFD (2002) Date Palm Propagation. In: A Zaid, Jiménez EJA (Eds.), *Date Palm Cultivation*. Food and Agriculture Organization of the United Nations, pp. 73-102.
4. Guo X, Min Q, Jiao W (2024) Spatial distribution characteristics and differentiated management strategies of China Nationally Important Agricultural Heritage Systems. *Journal of Geographical Sciences* 34(3): 483-498.
5. Bellato L, Frantzeskaki N, Nygaard C (2024) Towards a regenerative shift in tourism: applying a regenerative conceptual framework toward swimmable urban rivers. *Tourism Geographies* 26(8): 1361-1380.
6. Paddison B, Hall J (2024) Regenerative tourism development as a response to crisis: harnessing practice-led approaches. *Tourism Geographies*.
7. Ridanpää R (2025) Framework for regenerative entrepreneurship in tourism: fostering reciprocal relationships within place. *Tourism Geographies*.
8. Karami Y, Hosseini, Y, Nosratabad AF, Khankahdani HH (2021) Nitrogen and Phosphorus Application Effect on Yield and Some Characteristics of Date Palm in Minab Region. *Journal of Soil Management and Sustainable Production* 11(2): 109-125.
9. Chao CCT, Krueger RR (2007) The date palm (*Phoenix dactylifera* L.): Overview of biology, uses, and cultivation. *Hort Science* 42(5): 1077-1082.
10. Caviedes J, Ibarra JT, Mir LM, Junqueira AB (2023) Listen to us: small-scale farmers' understandings of social-ecological changes and their drivers in Important Agricultural Heritage Systems. *Regional Environmental Change* 23(158).
11. Braun V, Clarke V (2021) *Thematic Analysis: A Practical Guide*. SAGE Publications 22(2).
12. Prus B, Uruszczak M, Hernik J (2022) Arguments based on biocultural diversity to cease abandonment of traditional agricultural systems: Lessons from Poland. *Biodiversity and Conservation* 31(10): 1-26.
13. Roman JM, Font X, Delgado AT, Sanchez IR (2025) Co-creating sustainability innovations in a tourism destination: a participatory research design from Barcelona. *Journal of Sustainable Tourism*.
14. Rasoolimanesh SM, Rastegar R, Desbiolles FH (2026) Bridging sustainable and regenerative tourism through a place-based approach. *Journal of Sustainable Tourism*.
15. Guan J, Zhu D, Cheng S, Li Q (2025) It is my place: residents' community-based psychological ownership and its impact on rural tourism participation. *Journal of Sustainable Tourism* 33(7): 1303-1329.
16. Pezeshki F, Khodadadi M, Bagheri M (2023) Investigating community support for sustainable tourism development in small heritage sites in Iran: A grounded theory approach. *International Journal of Heritage Studies* 29(8): 773-791.
17. Zhang Y, Zheng Q, Huang L, Lee TJ, Hyun SS (2024) Alienation and authenticity in intangible cultural heritage tourism. *Journal of Sustainable Tourism* 32(12): 2459-2478.



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