

Rajasthan's Vanishing Green: An Investigative Study on Khejri Tree Mortality

Sunita Muwal¹ & Dr. Anoop Kumawat^{2*}

¹Research Scholar, Department of Accountancy and Business Statistics, University of Rajasthan, Jaipur, Rajasthan.

²Head & Assistant Professor, Department of Accountancy and Business Statistics, University of Rajasthan, Jaipur, Rajasthan.

*Corresponding Author: caanoopkumawat@gmail.com

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Abstract

The "lifeline of the desert" is the Khejri tree (*Prosopis cineraria*). It is an important tree species in Rajasthan, contributing to ecological balance, biodiversity, soil fertility, and the sustainability of rural lives. However, in recent years, large-scale death of Khejri trees has become a major environmental concern. This study explores the key reasons of Khejri tree death in Rajasthan and proposes solutions. The study finds different diseases and climate change as key causes to the decline while also investigating the significance of Khejri trees. Based on the analysis, the report recommends scientific management, afforestation efforts, and awareness campaigns. The study suggests that conservation measures are critical to preserving Rajasthan's state tree and ensuring ecological viability in arid habitats.

Keywords: *Prosopis Cineraria, Ecological Balance, Biodiversity, Khejri Tree, Root Rot Disease and Insect Infestation.*

Introduction

The Khejri tree, scientifically known as *Prosopis cineraria*. *Prosopis cineraria* is one of the most significant tree species found in the arid and semi-arid regions of Rajasthan. This is also known as the "Golden Tree of the Desert," which has vital place in the ecology of state. This tree also plays important role in the economic, social, and cultural life of the people of Rajasthan. In 1983 Government of Rajasthan declared Khejri as State tree, having due regards to its immense contribution to desert ecology and rural livelihoods. The *Prosopis cineraria* is highly drought-resistant, and capable to survive under extreme climatic conditions like high temperatures, water scarcity, and sandy soils.

Khejri plays a crucial role in maintaining ecological balance in the Thar Desert. The Golden Tree of the Desert improves soil fertility through nitrogen fixation, prevents soil erosion, enhances moisture retention, and also supports biodiversity by providing shelter and food for numerous birds and animals. Its leaves serve as nutritious fodder for livestock, while its pods, locally known as "Sangri," are consumed as a traditional vegetable. Sangri are economically important in Rajasthan's cuisine. Additionally, the Khejri provides fuelwood, timber, shade, and medicinal benefits, all this contribute significantly to the livelihood security of rural communities, especially during drought and famine conditions.

Prosopis cineraria are equally remarkable for cultural and religious importance. The Khejri is deeply associated with the Bishnoi community of Rajasthan. Bishnoi community is internationally recognized for its commitment to environmental conservation. One of the first environmental conservation initiatives in India was the historic sacrifice made in 1730 at Khejarli village by Amrita Devi Bishnoi and

363 locals to prevent the cutting down of Khejri trees. This represents the intimate connection between Rajasthani rural people and environmental preservation.

Despite its significance, the desert's lifeline has experienced alarmingly high mortality rates in recent years. Researchers have identified biotic and abiotic factors responsible for the decline of Khejri populations. Major causes include fungal diseases such as *Ganoderma* root rot, and infestation by root borer insects like *Acanthophorus Serricornis*. Some other causes are prolonged drought, climate stress, excessive groundwater extraction, urbanization, and changing land-use patterns. Some Studies conducted in Rajasthan revealed that large-scale mortality of *Prosopis cineraria* is significantly associated with fungal infections and insect infestations affecting the root systems of the trees.

In recent years, one more serious cause has emerged regarding the indiscriminate cutting of Khejri for infrastructure and solar energy projects in western Rajasthan. In districts like Bikaner, Jaisalmer, and Barmer several environmental groups, social activists, and local communities have raised objections against illegal felling of Khejri trees. All this causes have highlighted the urgent need for stronger conservation laws and sustainable development practices. Considering its ecological and cultural significance the Rajasthan High Court directed that no Khejri tree should be cut without prior approval.

The existing literature and institutional reports (AFRI, CAZRI) document individual causes of Khejri mortality, there is a lack of comprehensive, updated synthesis combining environmental, and biological factors.

The mortality and destruction of *Prosopis cineraria* is increasing that pose a serious threat to the fragile desert ecosystem and the livelihoods dependent on it.. For the long-term survival of this invaluable tree species the sustainable conservation measures such as disease management, community participation, afforestation, legal protection, awareness programs, and scientific monitoring are essential.

Hence, this study aims to analyze the importance of *Prosopis cineraria* in Rajasthan, identify the causes responsible for their mortality, and suggest suitable measures for their protection and sustainable conservation.

Review of Literature

Sidh (2026)- Urban heat stress poses a significant challenge in Rajasthan's cities, which are facing more frequent and severe heatwaves due to conventional urban development that has replaced greenery with impervious surfaces. This paper explores green infrastructure as a cooling strategy to combat urban heat island effects. It emphasises how flora, shade networks, and water-sensitive design may reduce temperatures and improve thermal comfort using secondary literature and planning frameworks. The incorporation of green infrastructure into planning is frequently insufficient and unfair, despite its potential as an economical adaptation strategy. Inadequate coverage and efficacy result from current urban master plans' use of green spaces as merely decorative elements rather than essential climatic infrastructure. The paper advocates for a shift in urban planning to prioritize green infrastructure as an essential component of heat-responsive urbanism, particularly vital for cities in hot-arid regions facing rapid urbanization and climate challenges.

Gurjar et al.(2025)- Dehydrated tender green pods of khejri (*Prosopis cineraria*) are utilized as premium vegetable in north-west part of country. Looking into the economic importance of khejri pods (sangri), an experiment was conducted to investigate the effect of pod harvesting stage on drying, rehydration and sensory properties of dried pods during year 2021-22. The maximum dry product recovery (28.22%) was recorded in 13 days maturity closely followed by 16 days (28.08%) maturity pods. Significantly high rehydration capacity was noticed in early harvest (10, 13 and 16 day's maturity) pods as compared to late harvest (19, 22 and 25 maturity) pods. Desirable sensory properties were also observed in 10 to 16 days maturity pods. Based on study, it is concluded that khejri variety Thar Shobha pods should be harvested in 2-3 pickings between 10-16 days after fruiting for getting good quality dried product.

Bikku(2025)- Climate change poses significant global challenges with varying regional impacts, specifically threatening human and non-human species. This study examines local environmental practices in Khejarli Village, India, focusing on the Bishnoi community through ethnographic methods. Results demonstrate the Bishnois' strong ties to the natural world and the impact of their religious convictions on conservation initiatives since the fifteenth century. The desert ecology depends on their

dedication to preserving the region's biodiversity. The paper highlights the significance of micro-level ethnographic studies in solving environmental challenges and promotes the inclusion of local knowledge in international climate negotiations.

Godara et al. (2025)- The need for food, fuel, and housing is rising due to a fast expanding population, which strains natural resources. Deforestation and increased CO₂ emissions are examples of human activities that are raising atmospheric carbon levels, which is causing notable increases in global temperatures and an increase in the frequency of droughts. Ecosystems in arid areas are negatively impacted by drought, which results in decreased growth, changed plant life cycles, and increased tree mortality. This review looks at how drought affects the distribution of biomass between aboveground and belowground tree components and how it affects resilience, growth, and carbon storage. It seeks to pinpoint trends and knowledge gaps about how dry zone forests react to drought and how they affect the global carbon cycle in the face of worsening drought conditions.

Plosca et al. (2025)- Reishi, or *Ganoderma lucidum*, is a medicinal mushroom known for its many bioactive constituents, such as triterpenoids and polysaccharides, which support its health advantages. In addition to uses in the treatment of diabetes and cardiovascular disease, these advantages include immunomodulation, antioxidant effects, liver protection, and possible anti-cancer characteristics. The effectiveness of its chemicals has been improved by developments in extraction techniques. Despite its potential as a functional food and therapeutic agent, *G. lucidum* remains underutilized, indicating a need for further research to improve industrial applications and assess safety in specific populations.

Jiang et al. (2025)- The necessity for efficient treatments is highlighted by the increased incidence and mortality rates of cancer patients. Although targeted therapies and other conventional treatments have certain advantages, they frequently have negative side effects. Chinese herbal medicine, in particular *Ganoderma lucidum*, offers a viable substitute that may reduce cancer symptoms and slow the growth of tumours. Polysaccharides, triterpenoids, alkaloids, nucleosides, and amino acids are among the bioactive substances found in *G. lucidum* that have anti-inflammatory, anti-cancer, and antioxidant properties. While acknowledging the continuous controversy regarding their therapeutic usefulness, this study addresses these active compounds, their anticancer capabilities, and their implications for immunocompromised patients and biopharmaceutical breakthroughs.

Kumari and Tapwal(2025)-*Ganoderma lucidum* is a pathogen that causes root rot in the multifunctional *Senegalia catechu* tree. In this study, one-year-old saplings that had been artificially inoculated showed symptoms including yellowing leaves and eventually leaf drop that resulted in the sapling's demise. Root degradation was revealed by anatomical investigation, and infected saplings had much lower quantities of chlorophyll. According to the study's findings, *G. lucidum* infection causes root degradation, which compromises the availability of nutrients and water and eventually lowers photosynthetic efficiency. Strategies for improving plant health and productivity may be influenced by these findings.

Meena(2025)- The study was carried out in Rajasthan's Churu district's Taranagar area. The ecological function of the *Prosopis Cineraria* tree (Khejri) in the study region is the focus of this investigation. The author uses a variety of techniques for this investigation, including fieldwork and direct observation. Thermometers, hygrometers, poly bags, pH meters, and other instruments are used in this investigation. The author discovers that the Khejri (*Prosopis Cineraria*) tree is significant to the research area's ecosystem. It lessens arid soil erosion. Additionally, it improves the Taranagar region's biodiversity and soil fertility. This tree also produces oxygen, regulates the climate, purifies the air, and gives species a natural home and shelter.

Prasad (2025)- According to the study, a complex web of internal and external influences, particularly plant hormones like auxins and cytokinins, control plant growth and development. The interaction of these hormones is essential in Khejri (*Prosopis cineraria*), a hardy tree species in dry areas, particularly during drought. Auxins, synthesized in the shoot apex and young leaves, promote cell elongation and suppress lateral bud growth, leading to upward stem growth. Conversely, cytokinins produced in the roots encourage cell division and lateral bud growth, resulting in a bushier plant structure. The balance between auxins and cytokinins is crucial; a higher auxin-to-cytokinin ratio favors root formation, while a higher cytokinin-to-auxin ratio promotes shoot proliferation, a principle often applied in plant tissue culture to induce growth from plant tissue explants.

Chaudhary (2024)- The multipurpose tree *Prosopis cineraria* (L.) Druce (Khejri) is crucial to the rural economy of Rajasthan's dry and semi-arid areas. The quantity of Khejri trees has been steadily declining recently, and they are drying up. The reasons and severity of *P. cineraria* tree mortality in Rajasthan's Jhunjhunu area were investigated thru a thorough survey. The roots are harmed by climate change, the deepening of the water table, excessive lopping, and the use of contemporary farming equipment, which leaves them open to fungus and pests. The root rot *Ganoderma lucidum*, the root borer *Acanthophorus Serraticornis*, or both affected every dry Khejri tree in the study region. Another major issue with Khejri trees is inflorescence gall, which drastically decreases pod development. It is imperative to educate the locals about the reasons for this multipurpose tree's demise and inspire them to replenish the Khejri cover in the region.

Pareek et al. (2024)-The Thar Desert hosts a diverse range of medicinal trees essential to local healthcare. A study conducted in Sardarshahar, Churu district, identified 20 species of medicinal trees in 11 families. Of these, 65% were used for their bark, with important uses being indicated for their leaves, roots, seeds, flowers, stems, and other parts. This study calls for conservation efforts to protect these resources and the related indigenous knowledge while highlighting the deep traditional knowledge around these species and their significance in local health practices.

Objectives of the Study

- To analyze the importance of Khejri trees in Rajasthan.
- To identify the causes responsible for Khejri tree mortality.
- To suggest measures to overcome the causes responsible.

Research Methodology

This study was analytical and descriptive research. The study was based on secondary data from various research papers, Arid Forest Research Institute (AFRI) reports, environmental studies, newspaper articles, forestry publications, ICAR-Central Arid Zone Research Institute reports, and other online databases.

Importance of the Study

The *Prosopis cineraria* is "lifeline of the desert" because of its immense ecological, economic, cultural, and social importance. The tree has a vital role in sustaining life in the harsh conditions of the Thar Desert.

Due to the drought-resistant characteristic the tree can survive in extremely hot and dry climatic conditions where many other plants fail to grow and their deep root system helps in preventing soil erosion, desertification, stabilizing sand dunes, conserving soil moisture, acts as a carbon sink, and improving soil fertility through nitrogen fixation. The tree also supports biodiversity by providing shelter and food to birds, insects, and wild animals such as blackbucks and chinkaras.

The tree has traditional value in agricultural fields where farmers intentionally preserve these trees because it improves soil fertility naturally, and their shade protects crops from extreme heat. It is highly suitable for desert farming, unlike many trees, *Prosopis cineraria* do not significantly compete with crops for water.

The leaves of the *Prosopis cineraria*, known as 'luk,' are a highly nutritious and palatable source of fodder for livestock, especially during the lean, dry season. A single mature tree can yield about 60 kg of dry fodder annually (Nogalska, 2020). Even in severe summer conditions, the *Prosopis cineraria* remain green, making it essential for livestock survival in desert areas.

The pods of the *Prosopis cineraria* are widely used in traditional Rajasthani cuisine, especially in the famous dish *Panchkuta*, known as *sangri*. Sangri has nutritional and commercial value. It also additional source of income to rural communities. Different parts of the tree are used for fuelwood, timber, traditional medicines, preparation of food products, because almost every part of the tree is useful, it is often called the "Kalpavriksha of the Desert" or "Wonder Tree."

In Rajasthan particularly among the Bishnoi Community, the Khejri tree has deep cultural significance. In 1730 sacrifice led by Amrita Devi Bishnoi involved 363 Bishnois giving their lives to protect Khejri trees from being cut. Chipko Movement was also inspired by this event. The tree is also associated with religious traditions and is considered sacred in many communities.

Today, Khejri trees are recognized for their role in combating climate change, maintaining ecological balance in desert regions, and supporting sustainable rural livelihoods, which highlights the growing concern regarding the cutting and mortality of Khejri trees. Thus, the Khejri tree is not merely a plant but a symbol of survival, environmental protection, and cultural heritage in Rajasthan.

Causes of Khejri Tree Mortality

- **Ganoderma Root Rot**

The mortality of the *Prosopis cineraria*, indicate the influence of multiple biotic and abiotic stresses. The Ganoderma Root Rot (caused by the soil-borne fungus *Ganoderma lucidum*) is the most significant causes of *Prosopis cineraria* mortality. *Ganoderma lucidum* is also known by silent killer. This pathogen (soil-borne) attacks the roots system, by root injuries caused by mechanical farming, deep plowing, pest damage and environmental stress. These all factors results in reduced water and nutrient uptake, progressive drying of branches, it leads to gradual weakening and eventual death of the tree.

The symptoms of Infected trees are yellowing leaves, branch drying, reduced foliage, and root decay. The *Ganoderma lucidum* spreads more rapidly in sandy soils where trees are already under moisture and temperature stress.

- **Acanthophorus Serraticornis**

Acanthophorus Serraticornis is a longhorn beetle whose larvae act as a destructive root borer. These beetles are root feeders continuous feeding cause root injuries and creates open wounds that invites secondary pathogens *Ganoderma lucidum*, accelerating the tree mortality.

- **Climate Change**

Due to climate change heat waves has intensified and rainfall patterns altered across Rajasthan, which resulted in reducing soil moisture availability, weaken root systems, and make trees more vulnerable to diseases and pest attacks. The prolonged periods of low rainfall and rising temperatures have increased physiological stress on trees, although khejri is known for its drought tolerance but environmental stress often acts as a predisposing factor for mortality.

- **Chemical Fertilizers**

Khejri is nitrogen-fixing tree, it develops small, swollen nodules on its roots and these nodules house bacteria extract inert nitrogen from the air and convert it into biologically available nitrogen (e.g., ammonia). The *Prosopis cineraria* uses this nitrogen to grow, but Chemical fertilizers (particularly high-nitrogen synthetic feeds) can suppress this symbiotic relationship, causing the tree to stop fixing its own nitrogen.

- **Excessive Lopping and other Causes**

Excessive lopping of branches for fodder, and unsustainable cutting practices weaken trees over time. Repeated removal of foliage reduces the tree's ability to photosynthesize and recover from environmental stress.

Additionally, some factors resulted in the removal and damage of Khejri trees like infrastructure development, road construction, mining, industrial expansion, and agricultural land-use changes.

Among above mentioned all factors, all are equally responsible for accelerating tree decline. Since *Prosopis cineraria* has significant role in desert ecology, so conservation measures are necessary to protect this invaluable tree species.

Impact of Khejri Tree Mortality

The declining populations of Khejri contributes to increased desertification, as these trees helps in stabilizing sand dunes and preventing land degradation but their mortality accelerated soil erosion. Furthermore, it provides habitat and food for numerous plant and animal species; therefore, their decline leads to a reduction in biodiversity and ecological imbalance. Additionally, the loss of tree cover results in rising local temperatures because of increasing CO₂ in atmosphere, reduced shade and evapotranspiration, adversely affecting the region's microclimate.

Due to the mortality of these trees the soil fertility also reduces because Khejri enriches the soil through nitrogen fixation and the addition of organic matter. Mostly in western Rajasthan many households depend on Khejri-based products, including fodder, fuelwood, timber, and edible pods, as

sources of income and subsistence thereby mortality affecting livelihoods too. Moreover, the deterioration of soil quality and the loss of the beneficial effects of Khejri on crop growth leads to lower agricultural productivity, thereby affecting farmers livelihoods.

Measures to Overcome

To stop annual or excessive lopping, interval of at least one year to allow the tree to heal from pest and disease injuries. Lop only up to 2/3 of the tree canopy and retain one or two central branches at the top for faster rejuvenation. For Sangri fruit harvesting, lopping is recommended in May-June, otherwise in Nov.-Dec. months. Treat lopped portions and open wounds with [AFRI PASTE](#)¹ to check fungal infections.

Use native bio-control agents and micronutrients in farmyard manure (FYM) around the root zone for natural recovery. Refrain from deep mechanized plowing close to the trunk, as injured roots easily spread fungal infections. For infected trees, treat the root system using a 15–20 litre solution of a fungicide and insecticide. The Arid Forest Research Institute (AFRI) recommends a mixture of Carbendazim (0.1%) and Chlorpyrifos (0.1%) applied quarterly. Severely infected and fully dried trees must be uprooted and burned immediately to prevent the fungus and insect wicks from spreading to healthy flora. For new plantations, the ICAR-Central Institute for Arid Horticulture in Bikaner has developed an improved cultivar called *Thar Shobha* that is highly resistant to pest infestations. Awareness campaign should be conducted in rural as well as urban area for protection and regeneration of khejri trees as they play crucial role in dessert ecosystem.

Findings of the Study

- Khejri tree mortality in Rajasthan has increased significantly due to biotic and anthropogenic factors.
- Root rot disease and root borer infection are major biological causes.
- Climate stress accelerated tree decline.
- Lopping must be done at least after one year and ploughing by tractor should not be close to the trunk.
- Due to tractorization natural regeneration of khejri has also got reduced.
- Infrastructure development, road construction, mining, industrial expansion resulted in the mortality of khejri trees.

Limitations of the Study

- This study is confined to the geographic region of Rajasthan.
- It relies only on secondary data and literature.
- No extensive field surveys or laboratory investigations were conducted.
- The effectiveness of existing conservation policies was not empirically assessed.
- The suggestions made are broad and require location-specific confirmation.

Practical Implications

- Provides facts to support conservation policies and environmental regulations.
- Supports disease control strategies.
- Encourages afforestation and ecological restoration programs.
- Promotes community awareness and participatory conservation initiatives.
- Supports climate resilience, biodiversity conservation, and sustainable agriculture.
- Serves as a foundation for future environmental and ecological research.

Future Scope

- Conduct district-wide primary field surveys and long-term monitoring for Khejri tree populations.
- Develop scientific approaches to disease diagnosis, pest management, and ecological restoration.

¹One part of Copner Carbenate (½ Kg) + One part RedLead (½ Kg) + Raw Linseed oil (1.25 liter) or two partwhite petroleum jelly (1 kg) and 2 ml Monocrotophos. (modified Chaubattia paste). Mix Copper Carbonate and Red Lead homogeneously then add raw linseed oil (also known as Als ka tel) and add insecticide (Monocrotophos) and can be apply by brush or by hand using gloves.(AFRI Jodhpur)

- Use GIS, remote sensing, and drone technology to improve monitoring and conservation planning.
- Assess the socio-economic impact of Khejri tree decline on rural communities.
- Evaluate the effectiveness of conservation policies and afforestation programs.
- Promote comparative studies across arid regions to identify the best conservation practices.

Policy Recommendations

- Strengthen existing legislation to prevent unlawful felling and habitat damage of Khejri trees.
- The government should integrate conservation measures into infrastructure, industrial, and renewable energy initiatives.
- Scientific approaches for disease surveillance, pest control, and ecological restoration should be implemented throughout Rajasthan.
- The government should launch large-scale plantation and regeneration programs, with significant community engagement.
- Tree health and death should be monitored using GIS, remote sensing, and digital databases.
- The government should launch awareness programs to encourage citizen involvement in conservation.

Conclusion

Prosopis cineraria is more than just a tree species; it is a symbol of ecological sustainability and cultural legacy in Rajasthan. The increasing mortality of *Prosopis cineraria* poses a hazard to desert ecology, biodiversity, agriculture, and rural livelihoods. The study observed that fungal diseases, insect infestations, climate change, and human activities all contribute to the loss of the khejri population. Effective conservation necessitates improved scientific management, afforestation efforts, and active community participation. Preserving *Prosopis cineraria* is critical for maintaining environmental balance and safeguarding Rajasthan's desert habitat for future generations.

References

1. Bhatnagar, S., Singh, S., Khan, A.U., Kumar, B., Srivastav, K.K., Ahmed, S.I., & Rathore, T.S. (2017). Khejritree mortality associated with infestation of *Acanthophorus Serraticornis*(Olivier)and *Ganoderma lucidum*(Curtis) p. Karst. in Rajasthan. *Journal of Agriculture and Ecology*, 4, 33-36. <https://saaer.org.in/journals/index.php/jae/article/view/48/292>
2. Bikkur, B. (2025). Religion and Ecology: A Study on the Religious Beliefs and Practices in Conserving Ecology and Adapting to Climate Change Among the Bishnois of the Thar Desert in Rajasthan, India. *Religions*, 16(3), 380. <https://doi.org/10.3390/rel16030380>
3. Chaudhary, M. (2024). Causes and Severity of Decline of Khejri (*Prosopis cineraria*) from Jhunjhunu District of Rajasthan, India. *Journal of Plant Science Research*, 40(2), 339-345. https://www.researchgate.net/publication/384238622_JPSR_Vol_40_No_02_Binder_2
4. Godara, K. B., Jain, P. K., & Soloman, P. E. (2025). Drought-Induced Shifts in Biomass Allocation and Carbon Sequestration in Arid Zone Tree Species. *Nature Environment and Pollution Technology*, 24(4), 1-12 (B4323). [https://neptjournal.com/upload-images/\(55\)B-4323.pdf](https://neptjournal.com/upload-images/(55)B-4323.pdf)
5. Gurjar, P. S., Kumawat, K. L., & Sarolia, D. K. (2025). Effect of harvesting stage on drying, rehydration and sensory characteristics of *khejri* (*Prosopis cineraria*) pods. *ISAH Indian Journal of Arid Horticulture*, 7(1), 75-78. https://www.researchgate.net/publication/393025656_Effect_of_harvesting_stage_on_drying_rehydration_and_sensory_characteristics_of_khejri_Prosopis_cineraria_pods
6. Jiang, Y., Wang, Z., Wang, W., Liu, Y., Meng, Y., Wang, Y., Fan, M., & Cai, C. (2025). *Ganoderma lucidum* polysaccharide alleviates cognitive dysfunction by inhibiting neuroinflammation via NLRP3/NF- κ B signaling pathway. *Journal of Ethnopharmacology*, 338(2), 119065. <https://doi.org/10.1016/j.jep.2024.119065>

7. Kumari, A., & Tapwal, A. (2025). Assessing disease severity in *Senegalia catechu* saplings inoculated with *Ganoderma lucidum*. *Journal of Plant Pathology*, 107(4), 1921-1931. https://www.researchgate.net/publication/392844309_Assessing_disease_severity_in_Senegalia_catechu_saplings_inoculated_with_Ganoderma_lucidum
8. Mawar, R. & Ranganathan, S. (2023). *Ganoderma Root Rot Mortality: Managing the Growing Threat to the Tree behind Traditional Agroforestry in Indian Arid Region*. *Annals of Arid Zone*, 62(3), 185-195. <https://epubs.icar.org.in/index.php/AAZ/article/view/136137/52139>
9. Meena, P. (2025). A Study on The Ecological Role Of Khejri (*Prosopis Cineraria*) In Taranagar Region Of Churu District (Rajasthan). *International Journal of Creative Research Thoughts (IJCRT)*, 13(2), a150-a152. <https://www.ijcrt.org/papers/IJCRT2502016.pdf>
10. Nogalska, A.; Czapla, J. Yielding of spring barley depending on the application of growth regulators, and mixtures thereof with magnesium sulfate. *Pol. J. Nat. Sci.* 2020, 12, 37–51.
11. Pareek, L., Yadav, S., Tripathi, S. L., & Swami, S. (2024). MEDICINAL TREES OF SARDARSHAHAR IN CHURU: THE RAJASTHAN THAR DESERT REGION. *International Journal of Pharmacognosy (IJP)*, 11(12), 681-686. <https://ijpjournal.com/bft-article/medicinal-trees-of-sardarshahr-in-churu-the-rajasthan-thar-desert-region/>
12. Plosca, M. P., Chiş, M. S., Fărcaş, A. C., & Păucean, A. (2025). *Ganoderma lucidum*-from ancient remedies to modern applications: chemistry, benefits, and safety. *Antioxidants*, 14(5), 513. <https://www.mdpi.com/2076-3921/14/5/513>
13. Prasad, N. (2025). EFFECT OF AUXINS AND CYTOKININS FOR THE GROWTH OF KHEJRI. *International Journal of Advanced Research in Engineering and Applied Sciences*, 14(3), 24-31. <https://www.garph.co.uk/IJAREAS/Mar2025/IJAREAS-nupur.pdf>
14. Samadia, D.K., Haldhar, S.M., Verma, A.K., Gurjar, P.S., Berwal, M.K., Gora, J.S., Kumar, R., & Ram, H. (2021). *Khejri research for horticultural harnessing and environmental services: an appraisal*. *Journal of Agriculture and Ecology*, 12, 1-26. <https://saaer.org.in/journals/index.php/jae/article/view/399/338>
15. Sidh, L. N. (2026). GREEN INFRASTRUCTURE AS AN URBAN COOLING STRATEGY IN HEAT-PRONE CITIES OF RAJASTHAN. *Journal of Advanced Interdisciplinary Studies*, 2(3), 22-45.
16. Srivastava, J.P. & Hetherington, J.C. (1991). *Khejri (Prosopis cineraria): A Tree for the Arid and Semi-Arid Zones of Rajasthan*. *International Tree Crops Journal*, 7(1-2), 1-16. <https://doi.org/10.1080/01435698.1991.9752898>
17. Times of India reports on Khejri conservation and illegal felling in Rajasthan.

Web References

18. AFRI Report, available at [https://afri.icfre.org/UserFiles/File/extension/khejri%20english%20website %20upload.pdf](https://afri.icfre.org/UserFiles/File/extension/khejri%20english%20website%20upload.pdf).

