

## MONKEY JACK: A BEST ALTERNATIVE TO FODDER CROPS

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### ABSTRACT

*Monkey Jack (Artocarpus lakoocha Roxb.) is an important tropical tree species commonly observed among South Asian nations. It is a wild species of Jackfruit which is a multipurpose tree that provides fruit, fuel, timber, medicine, dye, and thick shade. The tree's green leaves are used as fodder for milch animals in different parts of India as it has a rich source of crude protein and other minerals. Monkey jack (Artocarpus lakoocha Roxb.) provides multiple benefits and services to the ecosystem.*



### INTRODUCTION

Agroforestry systems can be advantageous over conventional agricultural and forest production methods. They can offer increased productivity, social, economic and environmental benefits, and greater diversity in the ecological goods and services. Multipurpose trees are also a part of the agroforestry system. In addition to providing fodder, fuel, wood, and other products, trees in agroforestry systems promote soil and water conservation, enhance soil fertility, and act as windbreaks for nearby crops. Multipurpose tree species that are purposefully grown to provide two or more products and service functions like shelter, shade, and land sustainability of the land-use system. Fodder trees are essential to feed sources for livestock in a wide range of farming systems worldwide. Low quality and quantity of feeds significantly limit livestock productivity among smallholder farmers. In many countries, farmers have fed tree foliage to their livestock for centuries, using wild browse or trees that grow naturally on their farms. New agroforestry systems for feeding livestock have emerged over the last three

decades, involving planting mostly exotic species grown most frequently in hedges along field boundaries or the contours to limit soil erosion.



**Pic 1. The ripened fruit of Monkey jack (*Artocarpus lakoocha*)**

It is a tropical tree species which is widely distributed among South Asian countries like India, Sri Lanka, Bangladesh, Thailand, Cambodia, Malaysia, Indonesia and Singapore. It is generally



**Pic 2. Unripe fruits for pickle making**

found in Sub-Himalayan humid regions of India and grows up to an altitude of 1200 meter above MSL (Dwivedi *et al.*, 2011). The *A. lakoocha* has medium to large growth habits with both deciduous and evergreen natures. The deciduous period is very short in Eastern India, which generally commences in February and ends in early March, where it has been reported to be absent in Western Ghats (Krishnamurthy and Sarala., 2013). It can grow up to 15 m in



height and makes a handsome ornamental tree. The leaves are oblong, acute, alternate, 10-25 cm with long, glossy green on the upper side, whereas old leaves are rough.



**Pic.3 Fully grown tree of Monkey Jack**

## SCOPE OF MONKEY JACK AS A GREEN FODDER

Monkey Jack (*Artocarpus lakoocha*) is a wild species of Jackfruit which is a multipurpose tree that provides fruit, fodder, fuel, timber, medicine, dye, and thick shade. The large green leaves are excellent fodder which contains 16 % crude protein (Kharel *et al.*, 2000). A tree can produce 60 to 200 kg of leaves per year (Orwa *et al.*, 2009). It is considered one of the best forages for milch animals due to its palatability and nourishing values in Nepal and



fodder for goats in Jharkhand (Dhungana *et al.*, 2012). A single fruit weighing between 250 g and 300 g contains 10-30 seeds which are irregular in shape and vary in size. Fresh fruits and seeds have high nutritional and medicinal value. The unripe fruit and male flower spike are used as a vegetable, to make pickles, sauces and chutneys. The fruits are sweet-sour in taste. The edible pulp is reported to have hepatoprotective properties due to the presence of antioxidants (Gautam and Patel., 2014) and is considered a liver tonic (Hari *et al.*, 2014). It is used in anti-inflammatory therapy and as an anti-ageing agent (Mongolsuk *et al.*, 1957). The powdered bark is used as a paste to cure skin ailments like boils, pimples, and sores. *A. Lakoocha* is reported to be widely used in the ethno-medicinal formulations by the tribal people of Jharkhand (Pandey and Bhatnagar., 2009). Leaves of *A. lakoocha* containing moisture (61.0%), total ash (8.0%), crude protein (28.6%), crude fat (1.52%), crude fibres (26.3%) and



**Pic.4 Leaves of Monkey Jack (A rich crude protein source) used as fodder**

carbohydrates (0.84%) respectively. Due to the high protein content and palatability, it will help eradicate fodder deficiency in dry months. It contains a higher amount of crude protein, which might be helpful to enhance milk production in milch animals even though it can help maintain body weight and reproduction. Considering this tree's importance, it will be helpful to provide ample amounts of essential nutrients to live stock in each season.

## LIMITATION

A few drawbacks associated with *A. lakoocha* include:

1. The tree population of *A. lakoocha* is gradually decreasing due to its extensive exploitation for food, fodder, timber and other uses.
2. Once extracted from the fruit, seeds quickly lose viability within a week, or sometimes even in a few days.
3. Vegetative propagation methods, such as rooting of hardwood or softwood stem cuttings, have not been successful (Napier and Robbins, 1989). Budding has been reported to be successful, with only a single report in Western Himalaya (Sharma *et al.*, 2005).

## CONCLUSION

Monkey Jack (*Artocarpus lakoocha*) can play a crucial role as a potential tree species for nutrition, poverty alleviation, and environmental, agricultural and forest ecosystem diversification and is capable of creating new market opportunities for the livelihood security of rural people if the drawbacks associated with it can be addressed through proper scientific research and development works on it.

## REFERENCES

- Dhungana S, Tripathi H P, Puri L, Timilsina Y P and Devkota, K P. 2012. Nutritional Analysis of Locally Preferred Fodder Trees of Middle Hills of Nepal: A Case Study from Hemja VDC, Kaski District. *Nepal Journal of Science and Technology* **13**: 39-44.
- Dwivedi D H, Mishra V, Singh N and Dwivedi S K. 2011. Genetic Variability Studies in Barhal Emile, Jean-Claude. Nutritive value and degradability of leaves from temperate woody resources for feeding ruminants in summer. *3rd European Agroforestry Conference Montpellier* pp. 23-25.
- Gautam P and Patel R. 2014. *Artocarpus Lakoocha* Roxb: An Overview. *European Journal of Complementary and Alternative Medicine* **1**:10-14.
- Gupta A K, Rather M A, Kumar Jha A, Shashank A, Singhal S, Sharma M, Pathak U, Sharma D and Mastinu. 2020. *A. Artocarpus lakoocha* roxb. and *Artocarpus heterophyllus* lam. flowers: New sources of bioactive compounds. *Plants*. **9**:1329.
- Kanak A R, Khan M J, Debi M R, Pikar M K and Aktar M. 2013. Nutritive value of three fodder species at different stages of maturity. *Bangladesh Journal of Animal Science* **41**: 90-95.

- Kharel R, Amatya S M and Basukala R. 2000. Survival and growth of selected fodder species in Dhading, Kabhura and Sindhupalchok districts. *Proceedings of the national-level Workshop on Improved Strategies for Identifying and Addressing Fodder Deficits in the Mid-Hills of Nepal* (Eds Khare, R, Amatya SM, Kiff L. and Regmi, BN) Department of Forest Research and Survey, Kathmandu. 13p.
- Krishnamurthy S R and Sarala P. 2013. Phytochemical studies of *Artocarpus gomezianus* Wall. ex Trecul. var. *lakoocha* Roxb. fruits collected from various altitudes of Central Western Ghats. *Indian Journal of Natural Product and Resources* **4**:398-411.
- Mongolsuk S, Robertson A and Towers R. 1957. 429. 2: 4: 3': 5'-Tetrahydroxystilbene from *Artocarpus lakoocha*. *Journal of the Chemical Society* **92**: 2231-2233.
- Napier I and Robbins M. 1989. *Forest seed and nursery practice in Nepal.* Forest seed and nursery practice in Nepal 412p.
- Orwa C, Mutua A, Kindt R, Jamnadass R and Simons A. 2009. Agroforestree Database: a tree reference and selection guide. Version 4. *Agroforestree Database: a tree reference and selection guide. Version 4.*
- Pandey A, Bhatnagar SP. 2009. Antioxidant and Phenolic Content of the Bark of *Artocarpus lakoocha*. *The Pharma Review* **1**:23-8.
- Sharma K and Thakur S. 2005. Vegetative Multiplication of *Artocarpus lakoocha* Roxb. a Hard to Root Species. *Indian Forester* **131**:259-260.

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