

## Poplar Cotton and Seasonal Allergy in Kashmir Valley: Separating Myth from Scientific Reality

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Every spring, as Kashmir Valley comes alive with colour and warmth, a familiar sight unfolds across Srinagar and the wider valley millions of white cottony fluffs drifting silently through the air, settling on roads, water bodies, and windowsills in what locals call “*phamb*”. This seasonal spectacle, produced by female Poplar trees (*Populus deltoides*), has long been blamed for the sharp rise in sneezing, runny nose, watery eyes, skin rashes, and breathing difficulties that affect thousands of Kashmiris every year between April and June. Hospitals across the valley report a 30–40 percent increase in patients with respiratory and allergic complaints during this period. However, a growing number of doctors, botanists, and scientists now challenge this long-held belief. They argue that Poplar cotton is not the real cause of seasonal allergy and that the true culprits are invisible to the naked eye. This article explores what science says about the Poplar allergy debate in Kashmir, what is actually causing the problem, and what can be done about it.

### Poplar in Kashmir: A Tree with Deep Roots

The Poplar locally known as “*Frass*” was introduced into Jammu & Kashmir on a large scale during the 1970s and 1980s (Fig. 1-2). Being a fast-growing tree, it quickly became popular for producing plywood, fruit boxes, cricket bat blanks, and matchsticks. Today, according to the Forest Survey of India, there are nearly 1.49 crore Poplar trees in Kashmir alone. The industry built around Poplar timber is estimated to generate a turnover of Rs 600 crore annually and provides livelihoods to thousands of farming families (Rafiq and Ahmed, 2020). The tree also supplies about 40% of the fruit packaging boxes needed for Kashmir's apple export each year. Given this economic importance, the demand to cut down all Poplar trees however understandable from a public health frustration standpoint deserves careful, science-based examination before any such action is taken.

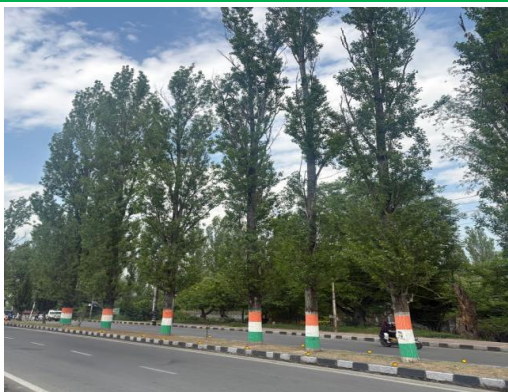


Fig. 1. Road side poplar plantation



Fig. 2. Poplar in Agroforestry system

## What is Poplar Cotton? Is it Really Pollen?

One of the most common and important misconceptions about this issue is the use of the term 'Poplar pollen.' Botanically speaking, this is incorrect. Pollen is produced by male trees, while seeds are produced by female trees. The Poplar trees planted across Kashmir are almost entirely female clones, propagated through cuttings, with male trees being largely absent from the valley. What floats through the air is therefore not pollen, but the tiny cottony hairs attached to Poplar seeds a natural mechanism that helps seeds travel long distances on the wind. A single mature female Poplar tree can release up to 48 million seeds in a year, which explains why the cotton appears in such overwhelming quantities (Fig. 3-4). These cottony seed fibres are large particles, far too big to enter the lungs or bloodstream, and have been found to contain no allergy-causing proteins (Bhat *et al.*, 2013). In a landmark 2025 study published in the Journal of Medical Sciences, SKIMS, Dr Roohi Rasool and Dr Tabasum Shafi from the Department of Immunology and Molecular Medicine, SKIMS Soura, concluded clearly that Poplar seed fluff does not trigger allergic reactions in the body (Rasool and Shafi, 2025). This was also confirmed by a report prepared by SKIMS and the Directorate of Health Services Kashmir, submitted to the J&K High Court, which found no scientific evidence linking Poplar seeds to respiratory disease.

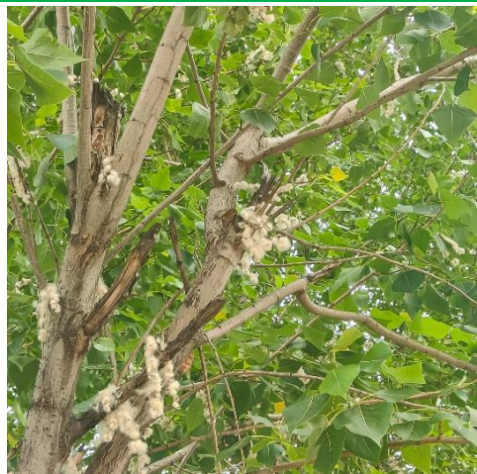


Fig. 3. Female cotton tree releasing seeds



Fig. 4. Female poplar tufts

## What is Actually Causing the Allergy?

The real causes of spring allergy in Kashmir are microscopic particles that are completely invisible to the naked eye which is precisely why they are so easy to overlook. According to Dr Nisar ul Hassan, President of Doctors' Association Kashmir, 90% of allergy patients in the valley are sensitive to grass pollen, which peaks during the same March to May period when Poplar cotton is most visible. Common grasses found abundantly across Kashmir's meadows, lawns, and roadsides release pollen grains that are small enough to travel deep into the airways and trigger allergic reactions. Around 70% of patients are also sensitive to *Robinia pseudoacacia* (Black locust) pollen and 60% to *Morus Alba* (Mulberry) pollen. Over and above pollens, house dust mite is reported to cause allergy in as many as 92% of Kashmiri patients, making it the most common year-round allergen in the region. Road dust, construction dust, and dry spring winds further worsen matters. Poplar cotton (Fig. 5), while not allergenic itself, does contribute indirectly its fibres act like a sponge, picking up pollen, fungal spores, and dust particles floating in the air and carrying them into people's respiratory track. This 'carrier effect,' explained by Prof. Akhter H. Malik of the University of Kashmir's Botany Department, is why many people genuinely feel worse when the cotton is in the air, even though the cotton itself is not the cause of the allergy.

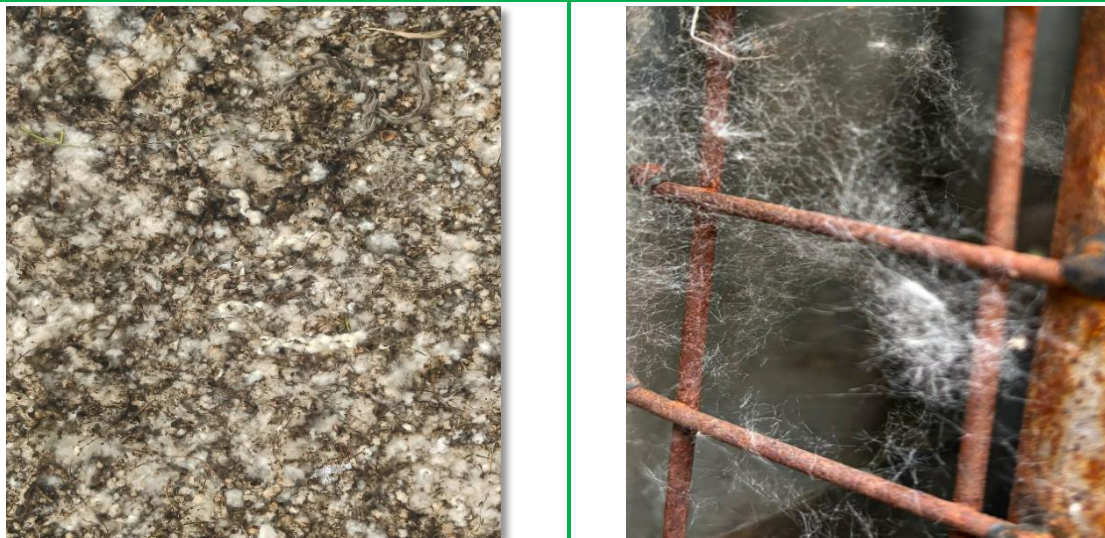


Fig. 5. Poplar cotton accumulation on floor and windows

### Why Has This Myth Lasted So Long?

The belief that Poplar cotton causes allergy has persisted for understandable reasons. The white fluff is strikingly visible it fills the air, settles on clothes, and enters homes while the true allergens are completely invisible (Shah, 2025). When symptoms appear at the same time as the cotton, the connection feels obvious, even if it is not scientifically accurate. Poor public awareness, limited allergy testing facilities, and insufficient communication from the medical community have allowed this myth to survive. The rapid spread of Poplar plantations encouraged by the government for commercial purposes also made the tree an easy target for public frustration. However, as scientists and doctors now clearly state, blaming and cutting Poplar trees will not solve Kashmir's allergy problem, and will instead cause serious economic damage to the thousands of families who depend on the timber.

### What Can Be Done?

Effective management of allergy-related concerns associated with poplar cotton requires an integrated approach involving healthcare professionals, forestry departments, researchers, policymakers, and the general public. The following scientifically supported measures (Islam, 2016) can help mitigate the problem:

- **Enhance Public Awareness:** Conduct awareness programmes to educate people that poplar cotton is not a true allergen, but may act as a carrier of pollen, fungal spores, and dust particles.
- **Promote Allergy Testing and Diagnosis:** Encourage individuals with allergic symptoms to undergo proper clinical diagnosis and allergen-specific testing rather than attributing symptoms solely to poplar trees.
- **Use Protective Measures During Cotton Dispersal:** Sensitive individuals should use protective masks and minimize prolonged outdoor exposure during the peak cotton dispersal season from April to June.
- **Implement Silvicultural Management Practices:** Lopping or pruning upper branches of female poplar trees before seed maturation can significantly reduce cotton production and dispersal.
- **Dispose of Collected Cotton Properly:** Accumulated cotton should be removed through controlled disposal methods such as burial or safe burning to minimize fire hazards and further spread.
- **Phase Out Female Poplar Trees in Sensitive Areas:** Female poplar trees located near hospitals, schools, residential colonies, and urban centres may be gradually replaced with male clones.

- **Promote Male Poplar Clones:** Since only female trees produce cotton, large-scale propagation and plantation of certified male poplar clones should be encouraged.
- **Strengthen Nursery Regulation:** Forestry agencies should regulate nurseries to ensure the supply of authenticated male planting material.
- **Establish Pollen Monitoring Stations:** Development of pollen monitoring systems across the Valley would help generate seasonal pollen forecasts and improve allergy management.
- **Improve Research and Allergen Profiling:** Region-specific research should be strengthened to identify dominant allergens affecting the Kashmiri population.
- **Integrate Public Health and Forestry Policies:** Coordinated efforts between healthcare institutions, forestry departments, and policymakers are necessary for evidence-based management strategies.
- **Avoid Indiscriminate Felling of Poplar Trees:** Scientific management and selective replacement strategies should be prioritized instead of complete eradication of poplar plantations.

## Conclusion

While the cotton-like seed fluff produced by poplar is widely perceived as the primary cause of spring allergies in Kashmir, scientific evidence suggests that it is not a true allergen but may indirectly aggravate allergic conditions by carrying pollen, fungal spores, and dust particles. The major allergens affecting the Kashmiri population are airborne pollen, weeds, fungal spores, dust, and dust mites. Therefore, indiscriminate removal of poplar trees is neither scientifically justified nor environmentally sustainable, particularly given their ecological importance and economic contribution to the livelihoods of thousands of families in the Valley. Addressing seasonal allergic disorders in Kashmir requires a balanced and evidence-based approach involving public awareness, accurate allergy diagnosis, pollen monitoring, sustainable forestry practices, and coordinated action among healthcare, forestry, research, and policy institutions. Emphasis should be placed on rational management strategies, including promotion of male poplar clones and regulation of female plantations in sensitive areas, rather than complete eradication.

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