

***PROBLEM OF FLYING COTTON
FROM POPULUS IN KASHMIR
VALLEY AND SOME REMEDIAL
MEASURES***

SFRI-J&K

Poplar in Jammu & Kashmir-India

- The Poplars were introduced in J&K on large scale in World Bank aided Social Forestry Project in 1980's
- Kashmir is the valley of Apples and most of these are packed in wooden Boxes.
- In J&K poplar trees meet 80% demand of fruit boxes & 14-15% for raw material for veneer/ply board industry.

- Since inception of the project in 1982 to 2011, a total No of 2805 lac plants were planted over an area of 1.6 lac Hectares besides
- 1568 lac plants were distributed to the farmers. (Digest of Forest Statistics, J&K Forest Deptt-2011).
- A total of 4373 Lac Poplar plants have been raised by Social Forestry Department Only other than the Private Nurseries/Growers.

Introduced Poplars adapted well to the Local climate (Temp range -10° to 38°C)



Green Tunnel of Poplars on NH.way



Species of Poplars found in J&K:

- The following species of Poplars are found in Jammu and Kashmir:
- I: *Populus alba* (White poplar)
- II: *Populus tremula* (Aspens or cotton woods)
- III : *Populus nigra* (Italica-Black Poplar)
- IV : *Populus deltoides* (Rousee Poplar)
- V : *Populus ciliata* (Jungli Fras)
- VI: *Populus caspica* (Dudh Fras)

Flowering in Poplars

- Male and female sexes on separate trees.
- The flowers appear in spring season when trees are still leafless.
- The poplars are wind pollinated and fruits ripe from ending May to early June.
- Ripe fruits release small seeds, which have a mass of long, silky hair to aid their dehiscence by wind.

Female Catkin



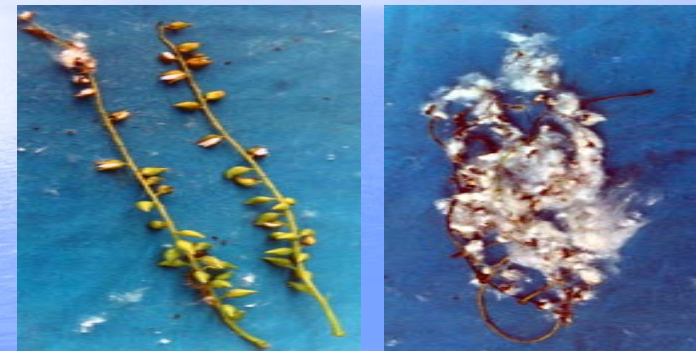
Male Catkin



Seed Production and Dissemination:

- Seed production in poplars starts when the trees are 5 to 10 years old, increasing rapidly in amount as the trees become older and larger.
- Annual seed production estimate of a single open-grown tree have been estimated as high as 48 million seeds.
- After maturity Good seed crops are a rule in Populus.

Seed Dispersal



- The poplars introduced in State were propagated vegetatively, multiplying the clones of the same type.
- Large scale propagation of female clones start producing seeds accompanied with flying cotton, causing the problem.
- State Govt.'s Committee on Environment also wanted a solution of the problem through organized research and monitoring.

Introduced Poplar Germplasm



Departmental & Private. Nurseries



Problem:

- Profuse dehiscence of cotton from the Populus, has resulted in:
- Aggravating respiratory diseases and allergies.
- Spreading fungal and bacterial infections that get trapped in the cotton & multiply
- Causing irritation of eyes, nose and throat
- Cotton becomes a potential fire catching substance.

Remedial measures:

- The problem of flying cotton can be tackled through systematic research & adopting short & long term measures:
Some of the short term measures are:

1.Public awareness:

- It is very important to make people aware that the cotton seeds of poplars do not induce any allergic conditions in humans. However, it could be a carrier of some of the pollen and fungal infections that cause allergic reactions. However, people already suffering from allergies of pollen etc. face complications. But definitely it is a nuisance. An awareness campaign and set of precautionary measures can be given especially by the Health & Forest Departments during the seeding period. Distribution of pamphlets/brochures will help a lot.

2.Precautionary measures:

- During the month of April-May female poplar trees produce cotton which in itself is not allergic, but it could be a carrier to a large number of pollen grains, which could be allergic and are produced by other trees like Walnut, Rubinia, Ash etc. After a few showers the problem subsides to some extent. People sensitive to seed pollen allergies should use mask when exposed to the cotton during the month of April- May (generally for 15-30 days) when seeds are shed. They should avoid going to places where there are poplar trees growing on mass scale.

3.Lopping of female Poplar trees:

- The upper branches of the trees produce more seeds and therefore more cotton than the lower branches, so lopping could help in minimizing the dehiscence quantum. Govt. Poplar growing departments, Farmers and poplars growers may be advised to cut down the upper & middle branches before fruit formation during the month of February/March.

4.Controlled destruction of cottony tufts:

- The cotton dehiscence from female poplars can also become a fire hazard, due to its highly inflammable nature. The cotton tufts may be collected and destroyed by burning or burying under controlled conditions, so that it does not spread and become a fire hazard. The areas around habitations and agriculture fields need to be kept clean.

5. Phasing out of female Poplars:

- Mass plantation of female poplar trees within the urban areas / habitations is the real problem. Identifying female poplars after proper survey in the month of March- April when they start flowering subsequently removal of the female trees in a phased manner over a period of time will help to curb this menace. Once again it is reiterated that proper monitoring is essential till the trees become reproductive.

6. Identification of male Poplars:

- During the survey process male poplars should be identified and marked when male catkins are visible. The male poplars can be used for taking the cuttings for vegetatively growing the male poplars.

Long term measures:

1. Mass plantation of male poplar clones:

The problem can be redressed by planting only male poplar clones for plantation purposes. Improved male clones of poplar suitable to the local conditions can be identified for future plantations.

2. Establishment of identified germplasm banks:

- Establishment of germplasm of identified male/female clones and their mass multiplication will allow farmers and growers to maintain clonal identity. Identified Elite cotton free male or less cotton producing germplasm will lead to more efficient economic and environmental gains.

3. Biotechnological studies:

- Biotechnological studies may also be carried out to develop genetic markers to identify and functionally characterize male and female cultivars in early stages in order to eradicate the flying cotton menace. This will help in production of identified germplasm banks or production nurseries with respect to their sex & clonal details.

4. Release of right sex mixing ratio of Poplars:

- The government forest departments especially Social Forestry Department after identification and verification of male and female trees should release appropriate ratio of male and female poplar clones to maintain a balance in sex ratio of poplars while going for mass cultivation and distribution of plants to the farmers and growers.

5.Establishment of Populatum:

- The native species have been reported to be producing less quantity of cottony seeds and better adapted to the local climate with only drawback of showing slow growth. A Populatum may be established, where all the species present in the valley could be grown and preserved, including native and introduced hybrid ones for comparative studies with the objective to develop a less cotton producing fast growing hybrid clone in collaboration with FRI Dehradun or any other research Institute. It is necessary to undertake scientific and experimental study of the various Poplar species upto its complete life cycle for ascertaining the merits and demerits of the species.

6.Registration of private nurseries:

- The private nurseries that are involved in the production of poplar seedlings be got registered with the Forestry department, Forest or Agriculture Research Institutes, that would check or provide them certified planting material for multiplication and ultimately distribution to the people.

7.Drafting preliminary bill:

- Govt. should formulate a draft /preliminary bill, for removal of poplar trees from private areas in phased manner and fix the maximum exploitable diameter upto which the Poplar trees could be retained in plantations by the private growers, for prevention of seed dispersal. The bill will impose certain restrictions on the people not to plant such poplars that cause this menace near their residential areas, schools, hospitals tourist places etc. It may also ensure that the female trees are cut in a rotation of 8-10 years, before reproductive phase.

Conclusion:

The importance of poplar trees in terms of environmental cleaning and economical value cannot be underestimated.

There is a need for awareness and educating people for growing poplars in balanced ratio of male & female varieties so that in future we may not experience profuse pollen/cotton in air beyond its carrying capacity.

Above all there is urgent need to develop better clones in future that will take care of every aspect related to Poplar Plantation including cotton dehiscence.

At the End A Quick Glimpse of Kashmir-India –Valley of Rivers



Valley of Fresh water lakes



Valley of meadows/forests



