



Research paper

## Russian Poplars (*Populus deltoides*) Boon or Bane: Perception of Residents of Kashmir Valley

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ARTICLE INFO	ABSTRACT
<p><i>Article history</i></p> <p>Received 29 October 2021                      Revised 18 November 2021                      Accepted 21 November 2021                      Published 02 December 2021</p>	<p>The objective of the study was to investigate perceptions of Environmental and health aspects of <i>Populus deltoides</i> among the residents of Kashmir valley. An online questionnaire was circulated among 100 students and the results were tabulated. The respondents have different opinions towards the perception on environmental and health aspects of <i>Populus deltoides</i>. 83.1 % of the respondents reported that these trees may also cause other respiratory diseases, Similarly, 83.1% respondents are in agreement that these trees cause nuisance to them and their family members. The early cutting down of branches from these may restrict the spread of cotton tufts as reported by 74.6% of the respondents and again 74.6% of the respondents think that it may cause impact to the economy of farmers in the area.</p>
<p><i>Keywords</i></p> <p><i>Populus deltoids</i>                      Allergy                      Respiratory disease                      COVID 19                      Kashmir</p>	

### 1. Introduction

Russian poplars (*Russii*) are backbone to the economy of Kashmiri farmers since they were introduced in Kashmir by World Bank in 1982 with the reason they mature quickly as compared to native species. This was perhaps the major mistake that only females were bought to the valley of Kashmir and they forgot to bring male partners at

that time. This is why Environmental Impact Assessment is an important indicator to decide the fate of any newly introduced species. But unfortunately this was not in practice during that period in India. In order to survive they have proved the role of survival of fittest and struggle for coexistence. These trees went through every change



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DOI <https://doi.org/10.5281/zenodo.5805879>



that is required for their existence in nature. Before few years these cotton tufts were not part of these trees and with the passage of time its concentration has increases and is causing a nuisance (Dar, 2013).

On the other hand, these trees have protected large part of the forest cover in Kashmir over the years as they supplied wood for the construction purpose and saves about 300,000 cubic feet of conifer timber annually in Kashmir. They have maintained ecological balance as well. They have protected larger area of land from desertification and soil erosion and provided shelter to innumerable birds and insects over the decades. They are also used for making the crates for exporting different fruits from Kashmir to other states. They may have additional benefits for the maintenance of environment that is yet to be counted by the researchers of Kashmir valley. However, in Kashmir last few years it is seen as public nuisance (Plate 1, Plate 2, Plate 3, Plate 4), as there is a fear that pollens from these trees may cause allergy, however, data is insufficient and it is well established fact that female trees do not shed pollens but its male species do so. An order circulated by Kashmir administration, to cut down poplar trees that may lead to economic and ecological crisis (Government of Jammu & Kashmir, 2020). There is lack of data supporting that the Russian poplars are causing allergies to people and if they are causing so, how much population is affected by them. There is no data that has confirmed any death due to Russian poplars in Kashmir valley. It is very unfortunate that these Russian poplars have been linked with COVID -19 without any authentic data. May be, cotton tufts released by female poplars will act as carriers if, COVID -19 pandemic will not stop (Dobriyal et al., 2020). There is no scientific data available that has claimed that female poplars are cause of respiratory infections in valley. A study in China and Hungarian city has claimed that pollens may contain allergens, and will affect 6.8% of hay fever patients (Zhang et al., 2015; Kadocsa et al., 1993). However, if the allergens will be produced by these trees it may even kill a person as it might go genetic changes in the coming years. Since there is much argument over this issue in Kashmir valley during the early spring an attempt was made to investigate the perceptions of residents towards

environmental and health aspect of *Populus deltoides* among the residents.

## 2. Methodology

### 2.2 Study Group

A cohort of 100 environmental science students was chosen for the present study. Only those students were involved who have studied or studying environmental science or biology in their post-graduation. The study group consisted of both male and female respondents. The students selected for the present study were from the Kashmir valley only as this species is inhabited here and causing problems to the people of the region.

### 2.3 Instrument Used

A pre-tested questionnaire was circulated online by using Google Survey (getfoureyes). The students were invited to fill the questionnaire by using different social networking sites and the link <https://getfoureyes.com/admin/survey/?surveyID=52451&p=s.builder.questions> was provided to them. The questionnaire consisted of questions of environmental and health aspects of Russian Poplar.

## 3. Results and Discussion

The results indicated that almost all (91.5%) the respondents were aware about the Russian Poplars and equal number (91.5%) of respondents believe that these trees may causes allergy to them. However, 83.1 % of the respondents reported that these trees may also cause other respiratory diseases. Similarly, 83.1% respondents are in agreement that these trees cause nuisance to them and their family members. This is an indication that these trees may be considered as a threat towards human health in these areas. Only 28.8% of the respondents reported that the cotton tufts from Russian Poplars may act as carriers of COVID 19 virus. Since no study has indicated that COVID 19 may be transported through these types of substances, intervention is needed and studies must be carried out in this direction. Almost 57.6% of the respondents believe that Russian Poplars should be removed completely from their areas and 40.7% of

them are against removing these poplars. Since it is causing respiratory and allergies to the respondents they advocated that these should be removed from their areas. 62.7% of the respondents reported that removing Russian Poplars may cause ecological disaster and 78.0% people think that these poplars are shelter for birds and insects and may cause additional burden on the forests. Similarly, it has been reported that these trees prevent desertification. It is well argued that cutting down large number of trees in a particular area may cause deforestation, fertile land to infertile land and soil erosion. Plants give oxygen and act as sink for the

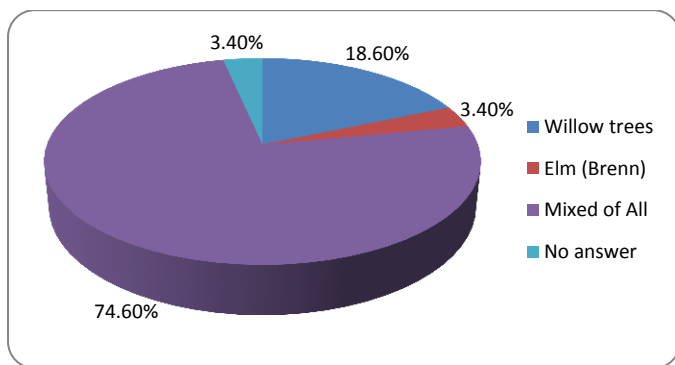
greenhouse gases and hence removal of Poplar trees may, therefore, encourage global warming and other environmental problems (Gregory, 2017). The early cutting down of branches from these may restrict the spread of cotton tufts as reported by 74.6% of the respondents and again 74.6% of the respondents think that it may cause impact to the economy of farmers in the area (Table 1). This is a fact that early branching is alternative to restrict the spread of cotton tufts but it may restrict growth and will definitely impact the economy of farmers. Therefore, a mechanism to prevent environmental disaster as well as health disaster need to be explored.

**Table 1.** Perception of Russian Poplars towards environment and health among the residents

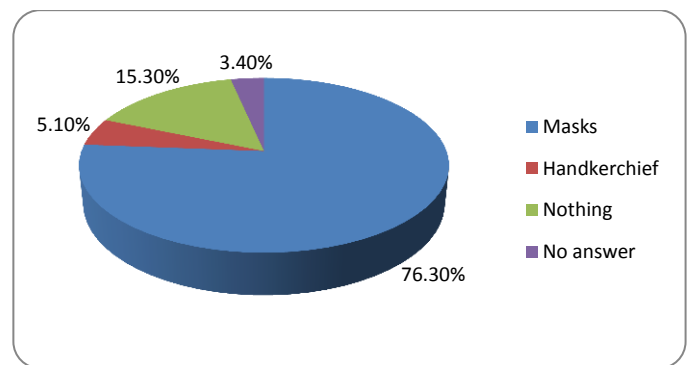
Questions	Yes	No	No Answer
Do you know what Russian poplars are?	91.5	6.8	1.7
Do you think Russian Poplars cotton tufts may cause allergies to people?	91.5	6.8	1.7
Do you think cotton tufts from Russian Poplars are cause of respiratory diseases?	83.1	15.3	1.7
Do you think Russian Poplars cotton tufts are causing nuisance to you and your family?	83.1	15.3	1.7
Do you think Russian Poplars cotton tufts are carriers of COVID 19?	28.8	67.8	3.4
Do you think Russian Poplars should be removed completely from your area?	57.6	40.7	1.7
Do you agree that removing these trees will cause ecological disaster?	62.7	35.6	1.7
Do you think these trees provide shelter to birds and insects?	78.0	20.3	1.7
Do you think removing these trees will put burden on forests?	78.0	20.3	3.4
Do you think Russian Poplars prevent desertification?	71.2	23.7	5.1
Do you agree that chopping early branches from these trees is a solution to the problem?	74.6	23.7	1.7
Do you think cutting Russian trees will impact economic loss to farmers?	74.6	23.7	1.7

75% of the respondents suggested that these trees should be removed and mixed trees of willow, Elm, Babool should be planted. 19% of them believe that that willows should be planted instead of these trees. Only few respondents suggested Elm and Babool (Figure 1). The second option is the planting of mixture of trees in place of Poplars may be considered in phased manner.

76% of the respondents use masks to avoid cotton tufts from Russain Poplars and 5% use handkerchiefs and 15% do not bother to keep these tufts away from them (Figure 2). Till then a proper mechanism to deal with the Poplars will be explored, people must be made aware and encouraged to use masks in areas with high poplar density to prevent cotton tufts so that respiratory and allergy rate may be reduced.



**Figure 1.** Suggestions for planting different trees instead of Poplars



**Figure 2.** Measures to avoid cotton tufts



**Plate 1.** Cotton tufts along the road side



**Plate 2.** Cotton tufts near residential areas



**Plate 3.** Cotton tufts in open fields



**Plate 4.** Cotton tufts in high density Poplar areas

#### 4. Conclusion

Cutting down of poplar trees at one time may cause ecological and economic disaster. Researchers should come forward to identify the real problem. A proper Environmental Impact Assessment must be carried out and If it is a health hazard, we must cut down these trees in a phased manner. The areas where trees will be chopped off must have a plan to plant that number of trees within a quick period of time. Cutting down lakhs of trees in one go will cause deforestation, soil erosion, change temperature of that area and it will be difficult for the organisms to survive in that area and similar other problems. We must think scientifically before moving ahead with this decision or we may have to be ready for an irreparable ecological disaster. Early chopping of the branches may be the option to restrict the spread of cotton tufts but it has its own consequences.

#### 5. Suggestions from the Respondents

##### 5.2 Against Chopping

- Proper administration and proper protocol must be followed. Early cutting of branches may be a useful tactics to cope up with the problem that very few people are facing.
- In place of one tree we must plant two other trees so that there will be less load on forests
- Male Russian trees should given farmers free of costs so that they will be encouraged to plant them and it will maintain ecological balance.
- It will cause economic loss on the farming community.
- Chopping down the early branches seems to be the only solution instead of uprooting them completely
- We should use masks to prevent ourselves from pollen that cause allergy.
- All Russian poplars are not nuisance but only female ones which produce cotton like stuff.. We should avoid planting them. We should encourage planting of Indian poplar and male ones.
- Plantation of new *Populus deltoides* saplings should be prevented.
- Russian Poplar trees should not be removed as it will cause ecological imbalance.

- As female Russian poplars are responsible for cotton tufts so these should be planted in limited quantities and early cutting of branches should be done.
- Branches of these Russian trees should be chopped. This is the only preventive measure.
- Cotton plants should be planted far away from ecological sensitive area

### 5.3 In Favor of Chopping

- These trees should be removed but instead of these other species should be planted.
- Farmers have to plant the trees like *willow*, *Elm* etc to counter economic loss & most importantly to prevent ecological balance & deforestation.
- These trees should be eliminated completely and new variety of trees should be planted to compensate the loss.
- It is necessary to cut all the Russian poplar but in place of these trees equal number of other trees should be planted so that there is no ecological imbalance.
- We need to cut down the female plants in a phased manner and also at the same time to plant more male plants.

Govt should ban these Russian poplars and community drive be carried to cut these poplars. Endemic poplar should be planted.

### Acknowledgements

Authors are thankful to the participants and farmers who helped to carry this survey and provided the necessary information in the form of Q&A.

### Funding Information

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors

### Declaration of Conflict

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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