A NOTE ON EUCALYPTUS AS A TREE SPECIES OF CONTROVERSY IN PAKISTAN

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Introduction

Out of many species of Eucalypti tested, *Eucalyptus camaldulensis* has emerged to be the best species for afforestation of dry tropical and sub-tropical regions of the world. In Pakistan, it has proved to be the most promising fast growing tree for dry afforestation and consating desortafication. For these reasons, Eucalyptus is planted in blocks and linear rows on farmlands, dry areas, marginal lands, as shelter belts and control of waterlogging and salinity in the plains of Pakistan.

At the same time, Eucalyptus is facing many accusations like lowering of water table and recent water shortage. With this prospective, the validity of these accusations is very essential before making any decision to use or not to use this species for planting on different sites. It is feared that in our biased attitude towards Eucalyptus, may not we forget or lose a tree species of un-paralleled advantages for the land and people of Pakistan.

Furthermore, the drought and associated water shortage in a country like Pakistan could be due to periodicity of climatic phenomena occurring locally, regionally or globally. But, it is astonishing that how a single tree species (Eucalyptus) and that too raised in small blocks, linear rows and planted over a very limited area could be responsible for such a large scale catastrophe.

The present water shortage and lowering of water table, in many parts of Pakistan. could be due to many other reasons. Change in life style and fast urbanization with extended home comforts and increasing sense of personal hygiene are the reasons for this dilemma. Hand and animal driven wells and pitcher system of water supply is being replaced with machine pumping, overhead tanks and house to house piped supply of water. These may be the main causes for the changing water supply and demand scenario in the country.

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Water Shortage and Eucalyptus

Climate in Pakistan, generally is not very conducive for good forest growth. About 70% of the country is arid to semi-arid and the ground water, in most parts, is very deep and brackish. Afforestation of such areas is not an easy job and that too over a limited span of time. Eucalyptus, in terms of it's survival, establishment and growth, has been rated as the best species among the forest trees, both local and exotic, for afforestation of water stress areas.

In recent years, the desert areas in the Provinces of Sindh, Panjab and Balochistan are badly hit by drought. The alleged impact of Eucalyptus on water availability seems to be seriously out of reason as there are hardly any trees or block plantations of Eucalyptus, in these areas, affecting rainfall and lowering of water table.

Experience over the past couple of years has shown that there remained a water shortage, and still persists, in the cities of Islamabad, Quetta and the town of Murree and adjoining Galies. Except for scattered trees in Islamabad there are hardly any Eucalyptus in Quetta, Murree and Galiat Hills. Moreover, large and perennial springs have dried up in some valleys, where the number of Eucalyptus trees, if any, is very nominal in comparison to the size of the problem and other tree species planted in the area.

Eucalyptus is a tree species with variable water demand. It thrives best under low as well as high moisture conditions. It is drought hardy under moisture stress induced by high rate of evapo-transpiration and low rainfall. At the same time, it is the most promising trees species under very high soil moisture (waterlogging) and high soil salt concentration (salinity/ sodicity).

The menace of waterlogging and salinity is fast engulfing the highly productive agricultural land in Pakistan. Over 6 million ha of best agriculture land has already been rendered unproductive by this problem, in almost all the provinces of the country. Experimental and pilot scales studies carried out by the Pakistan Forest Institute, Peshawar (PFI), Nuclear Institute of Agriculture and Biology (NIAB), Agriculture University, Faisalabad and International Waterlogging and Salinity Research Institute (IWASRI), Lahore have established that out of many local and exotic tree species tested, *Eucalyptus camaldulensis* is the best species, in terms of survival and growth, under waterlogged and saline conditions. In such conditions, it could also transpire large quantities of water, thus lowering the water table and each tree serving as mini-tube well without any additional cost on energy and engineering gadgets.

For the reclamation of degraded lands through waterlogging and salinity, WAPDA is launching a National Drainage Programme (NDP). On-farm drainage or biological control is to form a supplementary measure to the engineering approach, for this purpose. On-farm drainage is more easy, cheep with additional production and environmental benefits. As tested already, Eucalyptus is to form the main tree species in this programme.

Another reason of naming eucalyptus as water robbing, is the extensive research carried out on this species, otherwise other broad leaves, planted in Pakistan if investigated, may have even higher water demand than eucalyptus.

Conclusions and Recommendations

In the light of above discussion, it is concluded that planting of Eucalyptus is not a mistake, but a wise decision in consideration to climate, soil and biotic conditions in Pakistan. Those who talk against Eucalyptus are requested to suggest some other species which has Eucalyptus-like performance and at the same time does not have the alleged disadvantages. Recent spell of drought and water shortage, in some parts of Pakistan, is not because of Eucalyptus but due to change in water use and of climatic conditions. Therefore, Eucalyptus is still the most important species for dry afforestation and to combat desertification in Pakistan. For making best use of Eucalyptus, a wise decision where to plant and where not to plant this tree is needed. In this regards some limitations of planting Eucalyptus are given as under:

A. Where to plant Eucalyptus:

- Afforestation of dry zones.
- In waterlogged and saline areas and on farmlands with a potential risk of waterlogging and salinity.
- Other marginal lands degraded through erosion and loss of fertility.
- In locations where biotic interference (animals and human beings) is very high (road sides).
- In places where the risk of pests and pathogens is high.
- As shelter belts and windbreaks around the agricultural fields

- As noise barriers against street/traffic noise in the urban areas and along the highways.
- In places and areas where the market demand for Eucalyptus products exists.

B. **Where not to plant Eucalyptus**

- On irrigated farm lands without a potential risk of waterlogging and salinity.
- On rainfed farm lands.
- In watershed and ground water recharge areas.
- In places and areas where there is no market demand for Eucalyptus products.