**Title: “FOREST GENETIC TOOLS TO IMPROVE FOREST RESILIENCE TO CLIMATE CHANGE AND FOREST HEALTH."**

Abstract:

Forest health parameters respond to climate change having a direct impact on forest resilience. Intensification of human impact on ecosystem within the last decades has led to unexpected disturbances in the resilience of forest ecosystem on a global level as well as the provisions made for ecosystem services. The current Anthropocene era has led us to reconsider the forest management approach and to device new management practices having flexible nature and better dealing with global climate changes. This review aims to focus on the contemporary forest genetic tools, their utility and limitations with respect to improvement of forest resilience, climate change and forest health. Potential implications of genetic tools in forest management, its goals and principles and its response reveal the role of genetically diverse and adapted seeds and stock to be the foundation of forest health and ecosystem in addition to major contribution of gene conservation in vulnerable species and population preservation for future generations. Adaptive implementation owing to climate change require new tools, methodologies, skilled workforce, better infrastructure, re – focused investments as well as refined and reliable research and management.

**Keywords: Forest Resilience, Forest Health, Climate change, Genetic tools, gene conservation.**