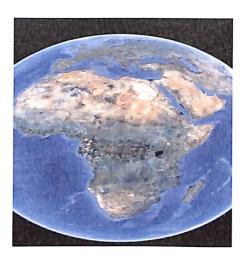# Project on Development of Drought Tolerant Trees for Adaptation to Climate Change in Drylands of Kenya

(July 2012 – June 2017)

Seeds of Melia volkensii

Climate change and forests in Africa

Do you know the threat of climate change in Africa?

According to the World Bank's estimate, the average annual temperature is likely to rise by 3-4 ^{o}C in Africa over the next 100 years. Accordingly, severer and prolonged droughts could occur more often than now.

What is the current situation of forest in Africa ?

Deforestation /degradation are still going on due to increasing population, conversion of forests to agricultural land, heavy energy dependence on forests, etc.

In Kenya, for example, forest covers only seven percent (KFS2010) of its total land. Climate change could be a serious threat to sustainable forest management.

What is the KEFRI/JICA project going to do in Kenya?

We will develop drought tolerant trees adaptable to climate change.

Tree breeding, genetic improvement of tree species for specific purposes, is one of the few options to adapt trees species to much warmer and drier weather conditions expected in climate change.

In this project, tree breeding is conducted by a conventional method of selection i.e., selection of individual trees showing better performances of specific traits like growth and timber quality than others. We will include drought tolerance as a trait of trees in the selection.

We have selected two native species as the targets for tree breeding.

Melia volkensii produces timber with good quality that is highly valued in the market.

Acacia tortilis provides timber and fuel wood as well as fodder for livestock.

The project is underway.....

- Two (2) Melia seed orchards are established and Two (2) Acacia seed stands will be established in Kitui and Kibwezi, eastern part of Kenya, using clones(Melia)/seeds(Acacia) of plus trees collected in arid and semi-arid land areas, as a source of quality seeds.

- Four (4) Progeny test sites are established in Kitui, Kibwezi, Marimanti and Kasigau. for selecting superior clones among plus trees planted in the seed orchards.

- Drought tolerance study and wood property data analysis are also conducted and the result will be reflected in the selection.

- DNA analysis is conducting to determine genetic diversity of Melia volkensii and Acacia tortilis within Kenya.

- Market survey for assessment the socio-economic importance of Melia volkensii was implemented and the report was published.
Based on the survey, Guideline for producing and distributing of quality seeds and seedlings will be developed and piloted.

The outcome of the project

- Provision of genetically improved seeds of target species to farmers. Improvement focuses on drought tolerance, fast growth and good timber quality to farmers

- A guideline for production and distribution of developed seeds to avoid possible genetic contamination

- Pilot distribution and Third country training to disseminate the outcome of the project

-Improved livelihood of the people in drylands with sustainable production of timber, fuel wood, and fodder

- Rehabilitation of forest and conservation of biodiversity

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