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

Muturi G.M., Kariuki J.G., Omondi, S.F. and Muchiri D.

PROJECT DURATION 2012 - 2017







PROJECT DESIGN

KEFRI's capacity for conducting research on genetic diversity of indigenous species (Melia volkensii and Acacia tortilis as pioneer trial) is strengthened.

KEFRI's capacity for implementing forest tree breeding of indigenous species (*Melia volkensii* and *Acacia tortilis* as pioneer trial) is strengthened.

Overall Goal

Quality plantations of indigenous species are extended in the ASALs of Kenya

Quality seed and seedling supply system for *Melia volkensii* is established.

Project Purpose

Research capacity and extension system necessary for promoting indigenous species plantation in the ASALs is enhanced.

Awareness of relevant stakeholders on the importance of quality seed and seedling is raised.

Melia volkensii

- A drought tolerant, termite resistant tree that produces high quality timber (used for making high value furniture, doors and windows frames)
- Provides fodder and fruits for animals
- Potential for large scale dryland afforestation (see suitable conditions next slide)





Acacia tortilis

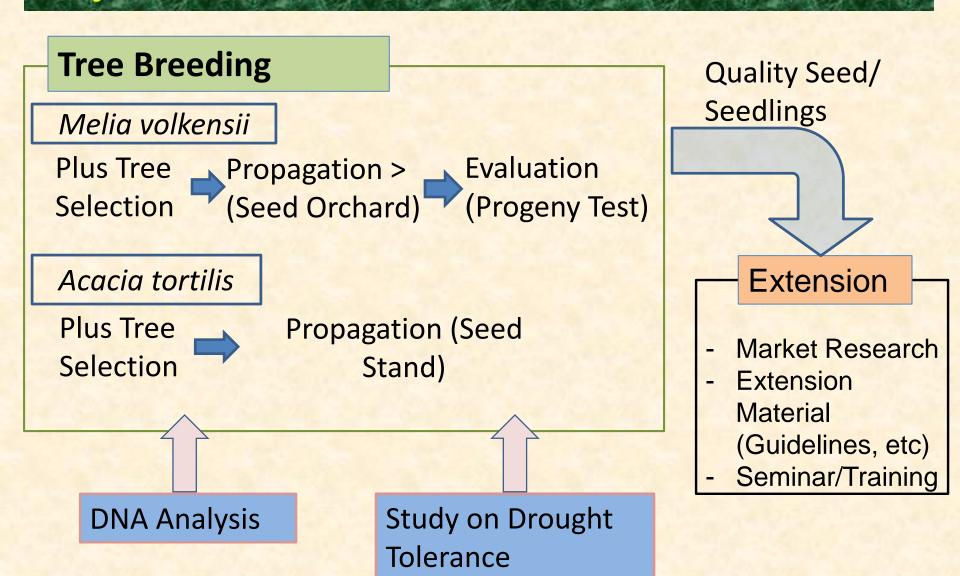


Fuelwood and charcoal

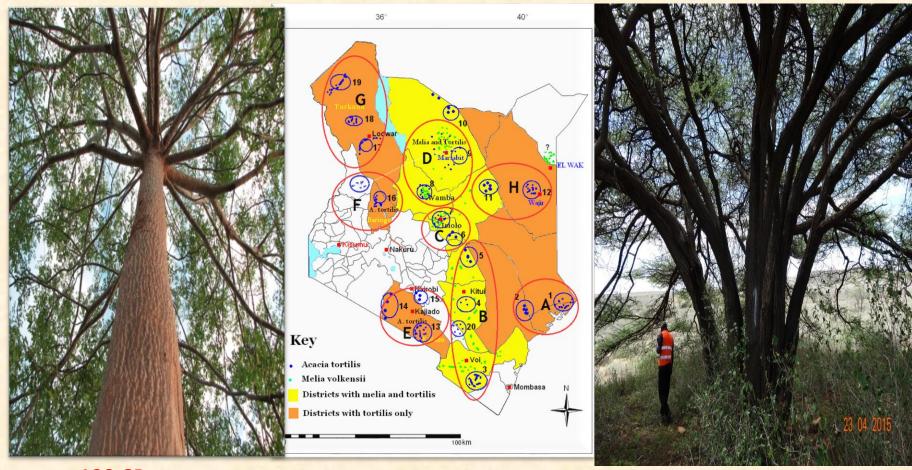
 Fuelwood of high calorific value (4400 kcal/kg)



Project Outline



Stratification of *Acacia tortilis* and *Melia volkensii* natural populations in Kenya & Selection of Candidate Plus Trees (CPTs)



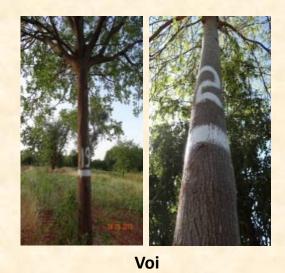
100 CP trees – M volkensii

100 CP trees – A. tortilis

Some selected Melia volkensii Candidate Plus Trees

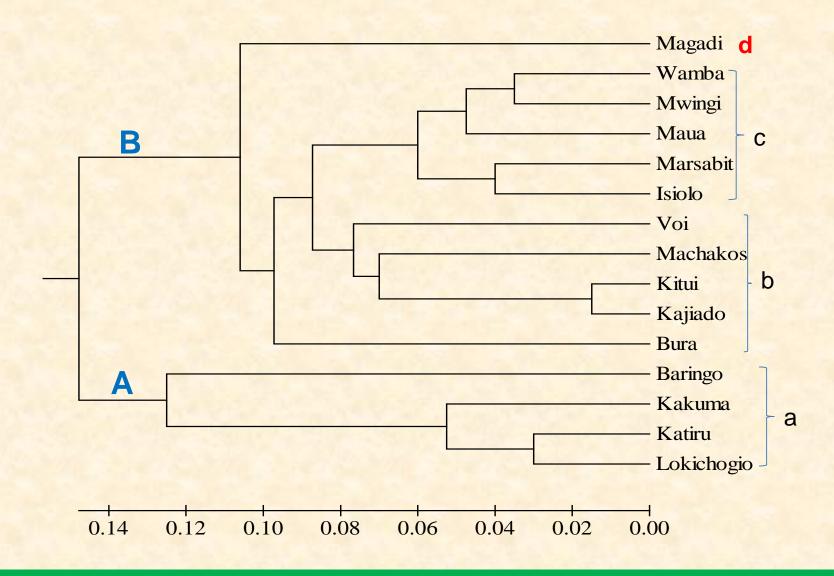








Tharaka



Dendrogram showing the structuring of *Acacia tortilis* populations in two major groups (A and B)

Phenotypic variation of *Acacia tortilis* seedlings depending on the CPT

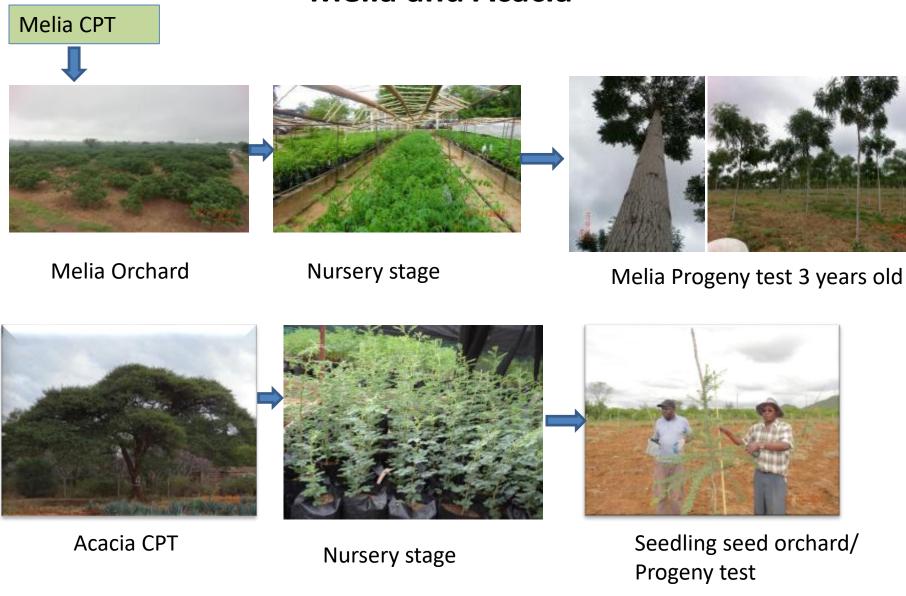


Straight

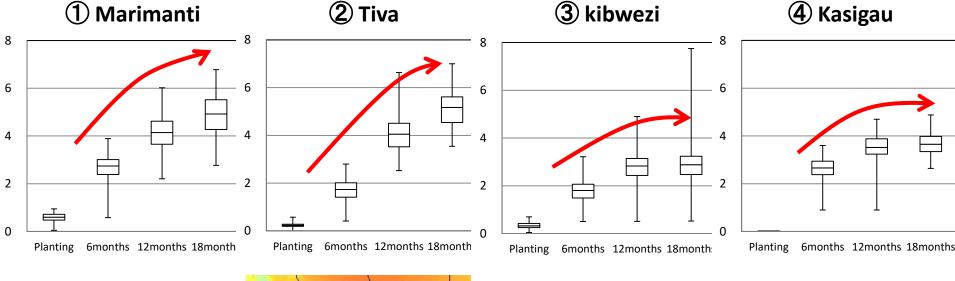
Bending



Melia and Acacia



Result of Progeny Test (Height)



- Precipitation high 信: 2825 low
- We will investigate the growth and select the recommended varieties in each area
- Eventually categorize sites according to forest site index classification

Result of Progeny Test (Volume)

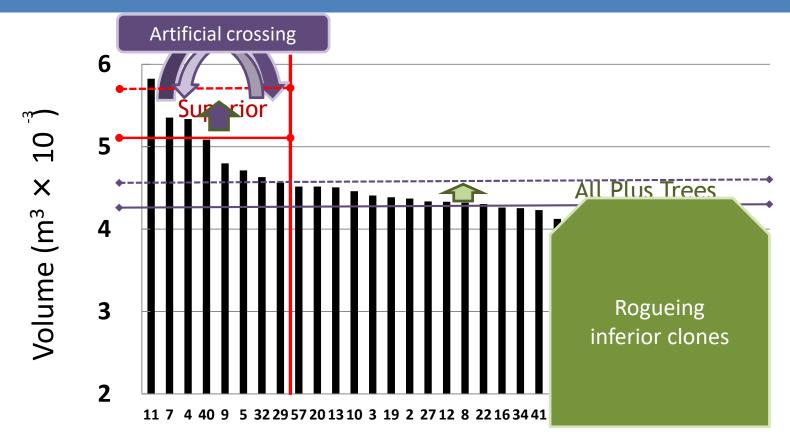


Fig. Volume of P.T. on each CPT at 1 year after planting

	Volume	
Superior	5.04	117%
ALL	4.32	

Eastern	Mwingi-Tseikuru
Eastern	Mwingi-Nuu
Central Eastern	Katulani-Kavisuni
South Eastern	Mutha-Inyali
Coastal	Voi-Mwatate

Marimanti Progeny test site

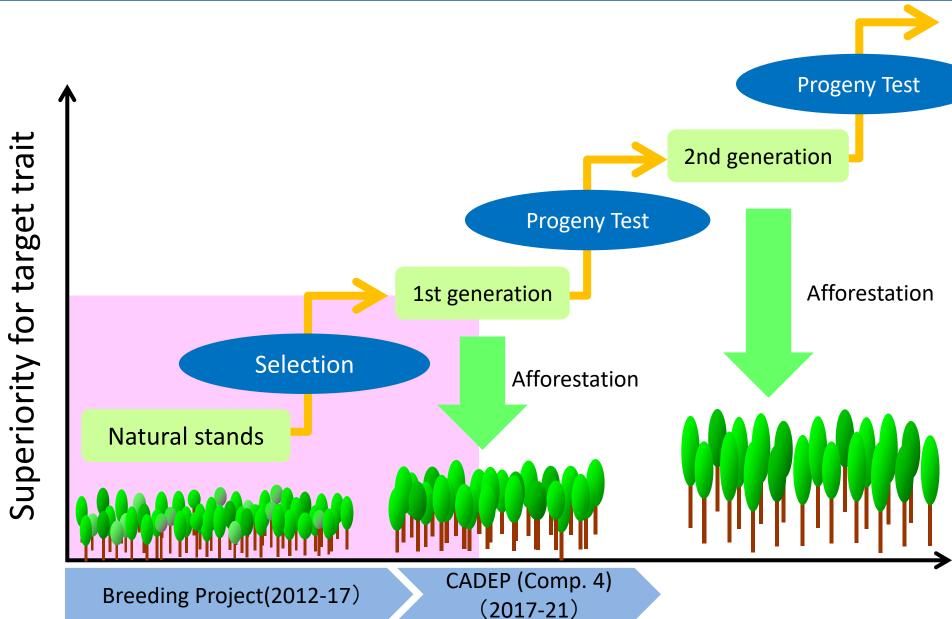




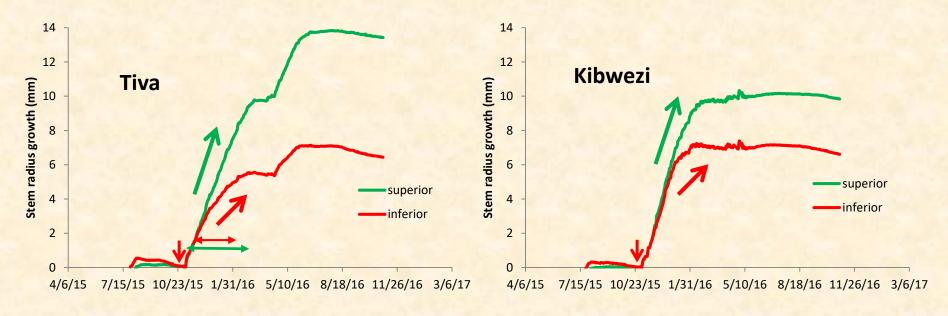
8 months





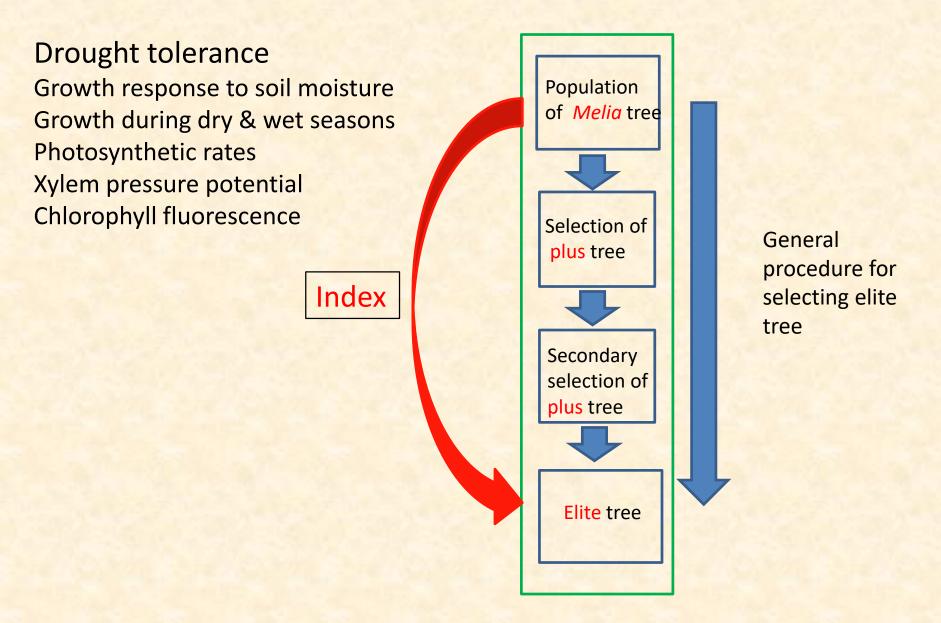


Results: Variation of growth duration and trends between fast and slow growing clones at Tiva and Kibwezi



- Stem growth started together and the slope of growth was same with Inferior and superior clones.
- ✓ Inferior clones stopped their growth earlier than superior clones.
- As a result, the growing period of inferior clone became shorter and dormant period longer than those of superior clones.

Contribution of drought index development to tree breeding



Extension: Establishment of Matithini demo plot through FFS



FFS Training at formative stage

FFS Members' session

FFS members and staff from KEFRI and KFS







Thank You



