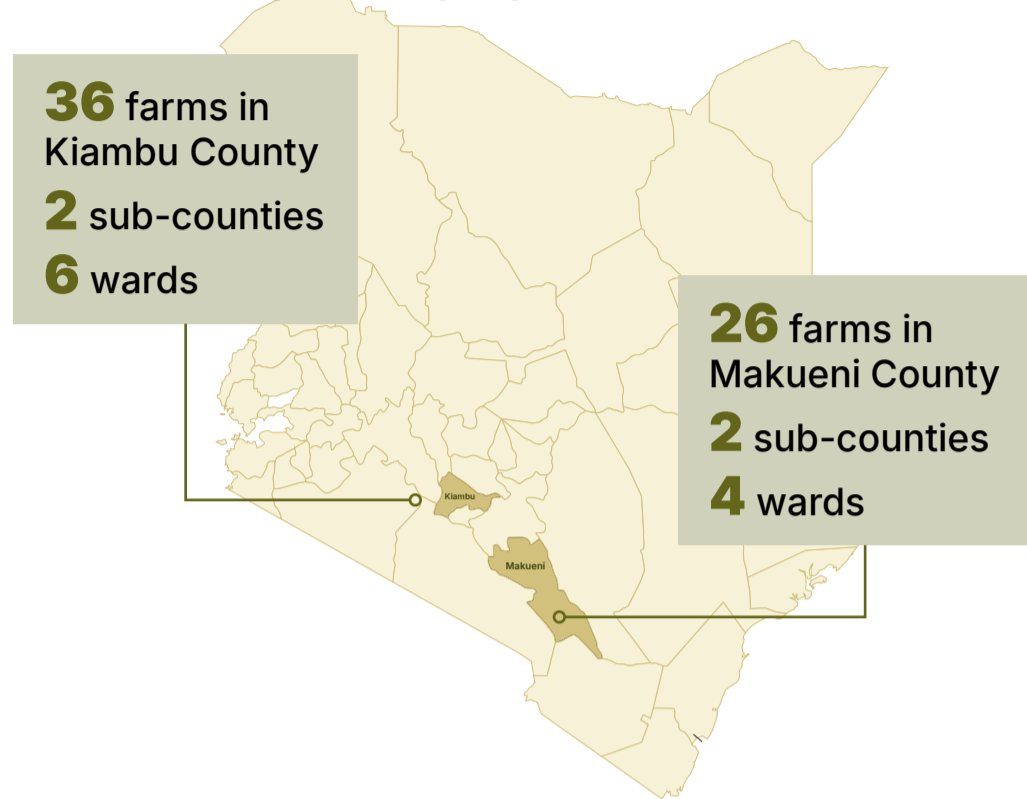


Species diversity and carbon storage in fruit trees on farms in Kiambu and Makueni counties, Kenya

Location and inventory

Trees, seedlings and saplings recorded on:



Proportion of fruit trees on farms

98 tree species with 1,893 individuals documented on cultivated farms in Makueni

- **47%** of all tree species are native to Africa, but make up only **10%** of the individuals

82 tree species with 2,488 individuals documented in Kiambu

- **62%** of the species are native to Africa, and make up **30%** of the individuals documented

41 fruit tree species with 811 individuals in Makueni
31 fruit tree species with 846 individuals in Kiambu

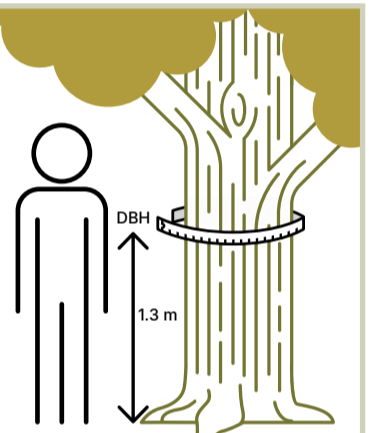
Allometric equations

- Based on destructive sampling of **50 mango, 41 avocado trees** for above ground biomass (AGB) estimation
- Uses diameter at breast height (DBH) or the mean diameter of primary branches per tree (μ DPB)



Measuring DPB in mango
 $AGB = 0.083 \times \mu DPB^{2.184}$

Measuring DBH in avocado
 $AGB = 0.0648 \times DBH^{2.5435}$



Carbon storage

Fruit trees store a significant amount of carbon (C), on average **$10.5 \pm 2.9 \text{ t C ha}^{-1}$** in mango, and **$9.7 \pm 2.5 \text{ t C ha}^{-1}$** in avocado

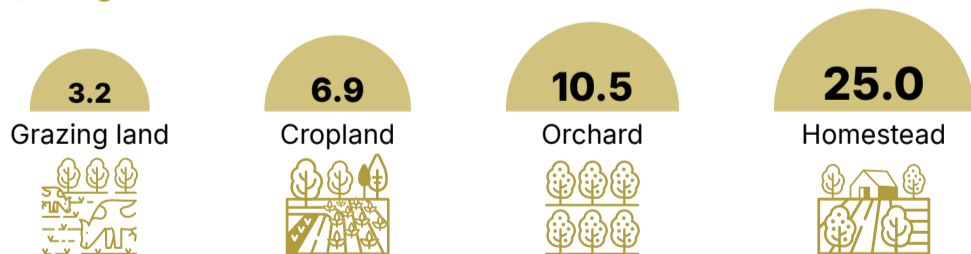


Tree inventory

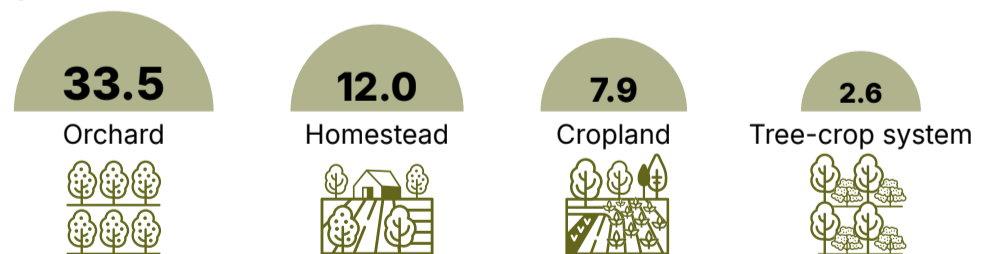
- 230 mango trees** measured on 23 farms with a total area of 3.1 ha in Makueni
- 466 avocado trees** measured on 36 farms with a total area of 14.42 ha

Location and size of aboveground carbon pool in tonnes per hectare (t C ha^{-1}) on cultivated farms

a) Mango trees in Makueni



b) Avocado trees in Kiambu



Disclaimer

Farmers in Kiambu and Makueni offered the avocado and mango trees harvested for developing allometric equations, and in return were provided with fruit tree seedlings.

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