

# Tracing the benefits of ICRAF tree fodder germplasm in smallholder agriculture

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## Highlights

- ICRAF plays a key role in conserving and making available high quality agroforestry germplasm.
- We surveyed 51 users of ICRAF genebank who had requested *Calliandra* and *Gliricidia*.
- The ICRAF genebank is the preferred source of *Calliandra* and *Gliricidia* germplasm for the majority respondents.
- Nearly 500 requests for *Calliandra* and *Gliricidia* were made by farmers.
- 60% of respondents reported that they shared the germplasm with other farmers.
- 80% of respondents were satisfied with the germplasm they received from the ICRAF genebank.

## Buffering climate change by conserving agroforestry diversity

Multipurpose trees provide multiple products or services to the farmer. They can contribute to rehabilitating degraded land and stabilizing soil, while providing animal fodder, fuelwood, food, and income for farm households. Hence, agroforestry diversity is crucial in sustaining ecosystem services against a backdrop of increasing pressures from drivers of environmental and economic change.

### Why *Calliandra*?

*Calliandra* is an affordable protein rich fodder. It has been identified as a suitable protein substitute or supplement within the smallholder dairy farming context.

<https://www.winrock.org/factnet-a-lasting-impact/fact-sheets/calliandra-calothyrsus-an-indonesian-discovery-for-humid-tropical-regions/>



### Why *Gliricidia*?

*Gliricidia* is appreciated for its role as a soil fertility enhancer. The fodder tree – known for its nitrogen fixation and carbon sequestration abilities – is a “nutrient-fixing” alternative for resource-poor farmers.

<https://www.winrock.org/factnet-a-lasting-impact/fact-sheets/gliricidia-sepium-the-quintessential-agroforestry-species/>



## Data and methods

The data for this study was obtained from a user survey and key informant discussions. Stratified random sampling was employed to select the sample of requestors for the user survey, based on the distribution data provided by ICRAF genebank for the two species (*Calliandra* and *Gliricidia*). The study targeted 119 users and we were able to interview 51 respondents (43% response rate) between 12 to 29 September 2018. We also consulted with 9 experts and scientists from ICRAF based on their diverse and recognized experience in the promotion of fodder trees.

Table 1. Distribution of *Calliandra calothyrsus* and *Gliricidia sepium* (2008-2017)

Species	Number of requests	Number of unique accessions	Quantity shipped (kg)
<i>Calliandra</i>	431	12	106.4
<i>Gliricidia</i>	248	6	132.5
Grand Total	679	18	238.9

## The ICRAF genebank

The ICRAF Genetic Resources Unit was established in 1993 with the mandate to collect, conserve, document, characterize and distribute agroforestry trees, mainly focusing on indigenous species in all ICRAF working regions. The genebank is situated at the World Agroforestry Centre (ICRAF) in Nairobi, Kenya.

ICRAF plays a key role in the conservation of tree genetic diversity, currently holding 6,336 seed accessions of multipurpose trees, representing 190 tree species. *Calliandra calothyrsus* (*Calliandra*) and *Gliricidia sepium* (*Gliricidia*) are the two most requested species.

ICRAF also maintains field genebanks in Latin America, East Africa, Southern Africa, West and Central Africa, South East Asia and South Asia, collectively holding a total of 139 species. The field genebanks are managed through ICRAF projects, national partners, farmers and communities.

## Why we need the ICRAF genebank: results from the user survey

The ICRAF genebank is the preferred source of *Calliandra* and *Gliricidia* germplasm for the majority of respondents. Respondents noted the difficulty in acquiring planting materials from other sources. The germplasm from the ICRAF genebank is also accessed at no cost, a matter that is highly appreciated by users.

Users acknowledged that the genebank distributes high quality germplasm, a crucial factor in guaranteeing successful germination. The assurance of high quality germplasm from ICRAF was a key factor in requests, with respondents noting that they cannot be guaranteed of the same germplasm quality from other sources.

Majority of respondents were satisfied with the germplasm they received from the ICRAF genebank.

*The satisfaction was attributed to the good germination rate, signifying high quality germplasm. Good customer services and easy instructions on the seed package were also identified as additional advantages associated with sourcing germplasm from ICRAF genebank.*

### Talk to farmers

Farmer seed networks are key in the adoption of tree fodder germplasm. Between 2008 and 2017, 76% of requests for *Calliandra* and 66% of requests for *Gliricidia* were made by farmers. 60% of study respondents also reported sharing seeds with other farmers.

### Alternative seed sources

- Kenya Forestry Research Institute
- Private commercial suppliers
- Kenya Agricultural Research Institute
- Other farmers

### Most important attributes of *Calliandra* & *Gliricidia*

- Fodder
- Fencing
- Soil fertility
- Firewood
- Soil erosion control

*Tree-based production systems are one of the solutions to the myriad challenges facing the African drylands. The ICRAF genebank is the most reliable source of high quality tree fodder germplasm for farmers in Kenya.*

