

Goal

Provide the necessary tools for plant tissue anatomical analysis, enabling the identification of morphological differences between genotypes, the evaluation of responses to abiotic conditions, and the determination of pollen viability through staining, with the goal of ensuring the continuous availability of high-quality forage legume seeds for various projects of the Tropical Forages Program, as well as for initiatives of partners and allies at a global level.



Where we work

Alliance of Bioversity International and CIAT campus (LBC-8H)



The boundaries and names shown on this map do not imply official endorsement or acceptance by the Alliance of Bioversity International and CIAT.

How we do it

- **Vacuum chamber tissue fixation:** Facilitates the removal of air and water trapped in intercellular spaces while reducing environmental pressure, thereby enhancing reagent infiltration or controlled tissue dehydration.
- **Agarose embedding:** Provides structural support to plant tissues, creating a malleable matrix for sectioning. This medium consists of a 5% agarose solution.
- **Vibratome sectioning:** Enables automated transverse sectioning of plant tissues with a precise thickness (in the micrometer scale), producing multiple uniform sections in short time frames.
- **Plant tissue staining:** Specific dyes are applied to tissue sections based on the target structure or compound, such as suberin, lignin, or viability indicators.
- **Microscopic observation and image capture:** Tissue sections are mounted on slides for microscopic examination, allowing the morphological characterization of structures relevant to the study.
- **Root scanning:** Harvested and cleaned roots from different trials are digitized using a flatbed scanner, producing high-resolution images that are later analyzed with specialized software to extract detailed morphological traits.

The impact

Approximately 90 accessions of a wide variety of tropical forage legume genera and species are stored in the cold room:

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|----------------------------------|------------------------------------|-------------------------------------|
| 1. <i>Arachis pintoi</i> | 7. <i>Dendrolobium triangulare</i> | 13. <i>Leucaena leucocephala</i> |
| 2. <i>Cajanus cajan</i> | 8. <i>Desmodium velutinum</i> | 14. <i>Mucuna pruriens</i> |
| 3. <i>Canavalia brasiliensis</i> | 9. <i>Desmodium heterocarpon</i> | 15. <i>Pueraria phaseoloides</i> |
| 4. <i>Canavalia ensiformis</i> | 10. <i>Flemingia macrophylla</i> | 16. <i>Sthylosanthes guianensis</i> |
| 5. <i>Centrosema molle</i> | 11. <i>Lablab purpureus</i> | 17. <i>Vigna unguiculata</i> |
| 6. <i>Clitoria ternatea</i> | 12. <i>Leucaena diversifolia</i> | |

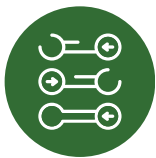
Technologies



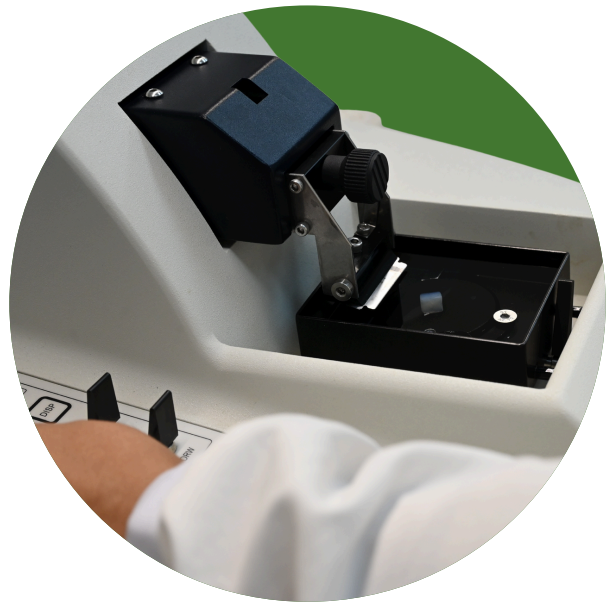
Epson Expression 13000XL flatbed scanner: Captures high-resolution images of plant organs for subsequent digital analysis.



LEICA DMLB microscope with integrated Olympus camera: Enables detailed observation and digital documentation of plant histological sections.



LEICA VT1000 S vibratome: Produces thin, homogeneous histological sections with minimal structural alteration.



Our partnerships

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



To know more about
the program, visit us:



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