Shivalik Shrub Biomass & Carbon Stock Estimator

Subtitle: ***Software for Estimating Above-Ground Biomass and Carbon Using Allometric Models in Northern Dry Mixed Deciduous Forests, India***

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Biomass and Carbon Stock Calculation

What does the software calculate?

This software estimates the total above-ground biomass (AGB) and carbon stock (ACS) of dominant shrub species in the Shivalik foothills, India. It uses species-specific allometric models developed through field-based measurements and statistical modelling.

How is biomass calculated?

At the plant level, biomass is estimated using simple field measurements of:
- D_0: Diameter at ground level
- H: Plant height
- CA: Crown area (where applicable)

The models apply power-law allometric equations to link these traits with total above-ground biomass. They were developed and validated using destructive sampling of 215 shrubs of *Lantana camara, Justicia adhatoda*, and *Murraya koenigii*, and tested with Monte Carlo cross-validation to ensure accuracy.

Carbon Stock Estimation

Carbon stock is calculated by multiplying the total above-ground biomass by species-specific carbon conversion factors. This improves accuracy compared to using generalized IPCC values, capturing differences among species.

Applications

- Forest biomass and carbon monitoring
- Ecosystem service valuation
- Climate change mitigation through carbon credits
- Forest management and conservation planning

Bibliography

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