



Hidden diversity in a perceived uniform crop: Linking farmer perception and phenotypic variation in amaranth

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A gardener buys one seed lot, calls it by a single local name and manages it as one crop. What does that name describe: phenotypically uniform plants, or a unit of seed management?

Tchapata in Zarma · Aleyyahou in Hausa

29/40

similar overall

Farmer judgement

30/40

visible variation

Enumerator observation

39.4%

height CV

Field measurement

Study design

GARDENER SURVEY

n = 40

Structured interviews in Niamey, 2025: seed sources, selection criteria and perceived within-plot variation. All respondents were men.

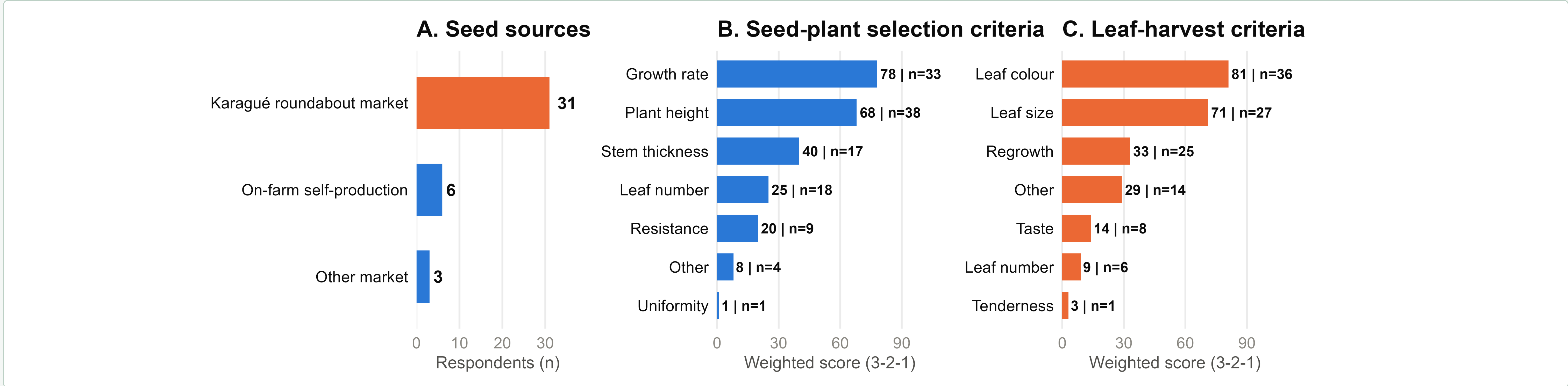
FIELD TRIAL

n = 180

One bulk seed lot. Randomised complete blocks: 3 × 60 plants. Height and leaf number measured at the early vegetative stage.

Same local seed system, but unpaired gardeners and plots

Seed sourcing and farmer selection



BLACK SEED COLOUR

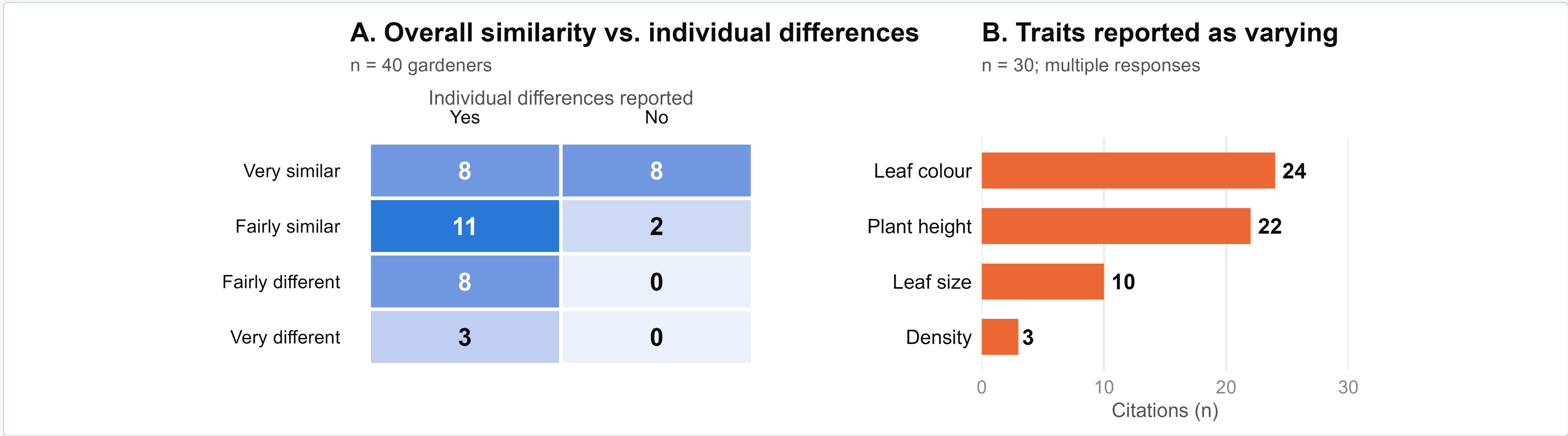
33/40

said it mattered

Reported reasons: resistance 13 · market demand 11 · rapid growth 6

Uniformity ranked last for seed selection. Regrowth was not measured in the field trial.

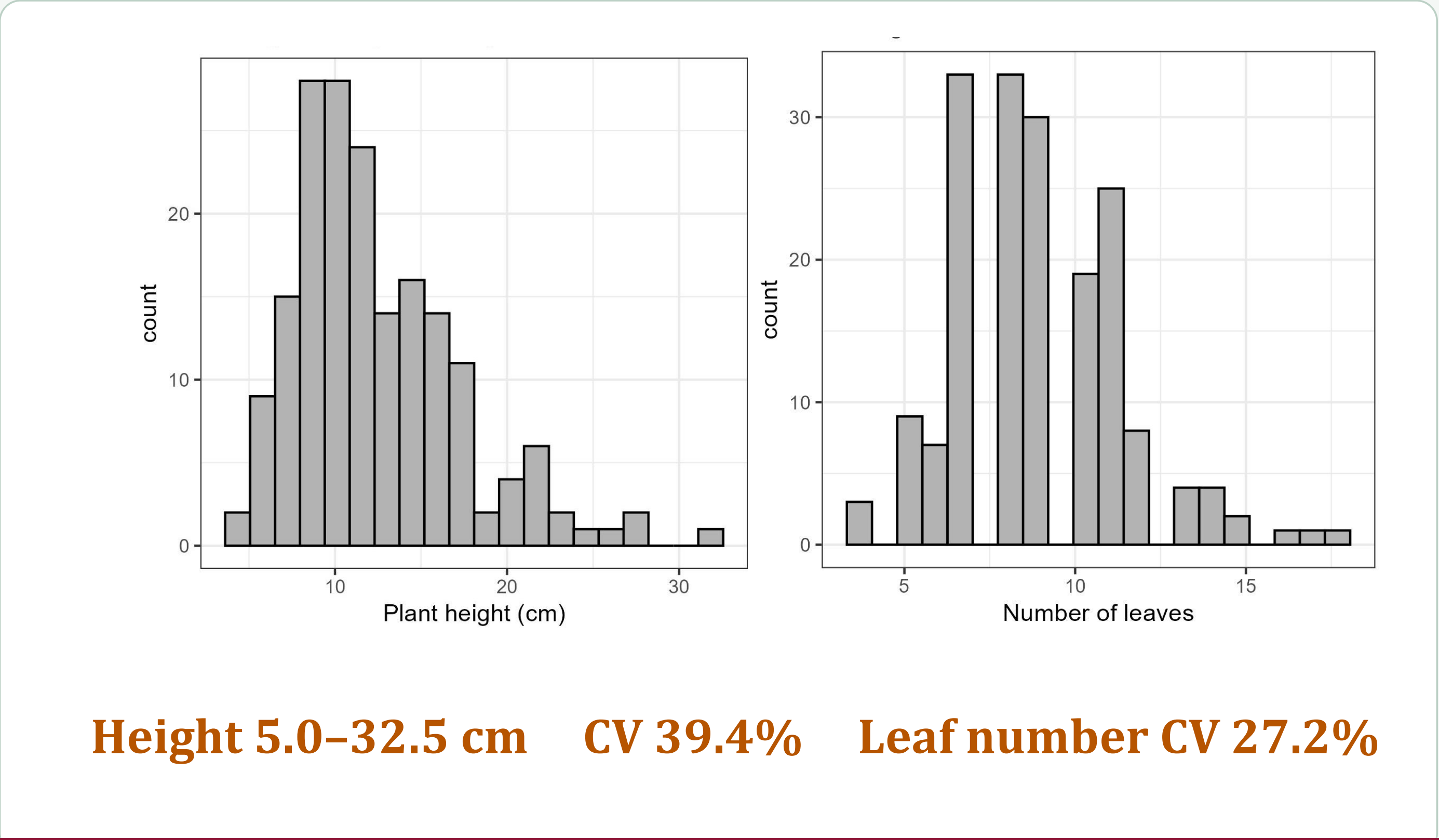
Similar overall, different plant by plant



19/40

reported differences among individual plants while describing the plot as similar overall

Measured variation and research perspectives



Research perspectives

First: sample multiple named seed lots across gardeners and sites.

Then: evaluate maternal families across seasons and environments.

Where feasible: genotype individual plants to characterise genetic diversity and test taxonomic assignments.

Limits: one season, one site, two vegetative traits, male respondents only.

TAKE-HOME MESSAGE

A named seed lot can remain one management unit while containing substantial phenotypic variation.