



Towards multi-functional agro-ecosystems promoting climate-resilient futures

Social stratification and livestock access: Rethinking equity in integrated agro-ecological farming systems

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Background

- **Agro-ecological farming systems** integrate crops, livestock and locally available resources to reduce external input dependence.
- In Natural Farming, **livestock-derived resources such as dung and urine** are important for preparing bio-inputs such as *Jeevamrutham* and *Beejamrutham*.
- Yet livestock ownership may be **socially differentiated**, potentially creating unequal capacities to participate in integrated agro-ecological systems.

Research Question

Does social stratification shape access to livestock assets that underpin integrated agro-ecological farming systems?

Study Context and Data

- **Andhra Pradesh Community Managed Natural Farming (APCNF)** promotes agro-ecological farming through reduced dependence on synthetic external inputs and greater use of locally available farm resources.
- This study examines whether access to a key productive asset, **Big ruminants (cows/bulls (cattle) and buffaloes)**, is socially differentiated among farming households.

STUDY AT A GLANCE

847
Households
5
Social categories
Andhra Pradesh
Study Region
49.4%
Own big ruminants

Social Composition



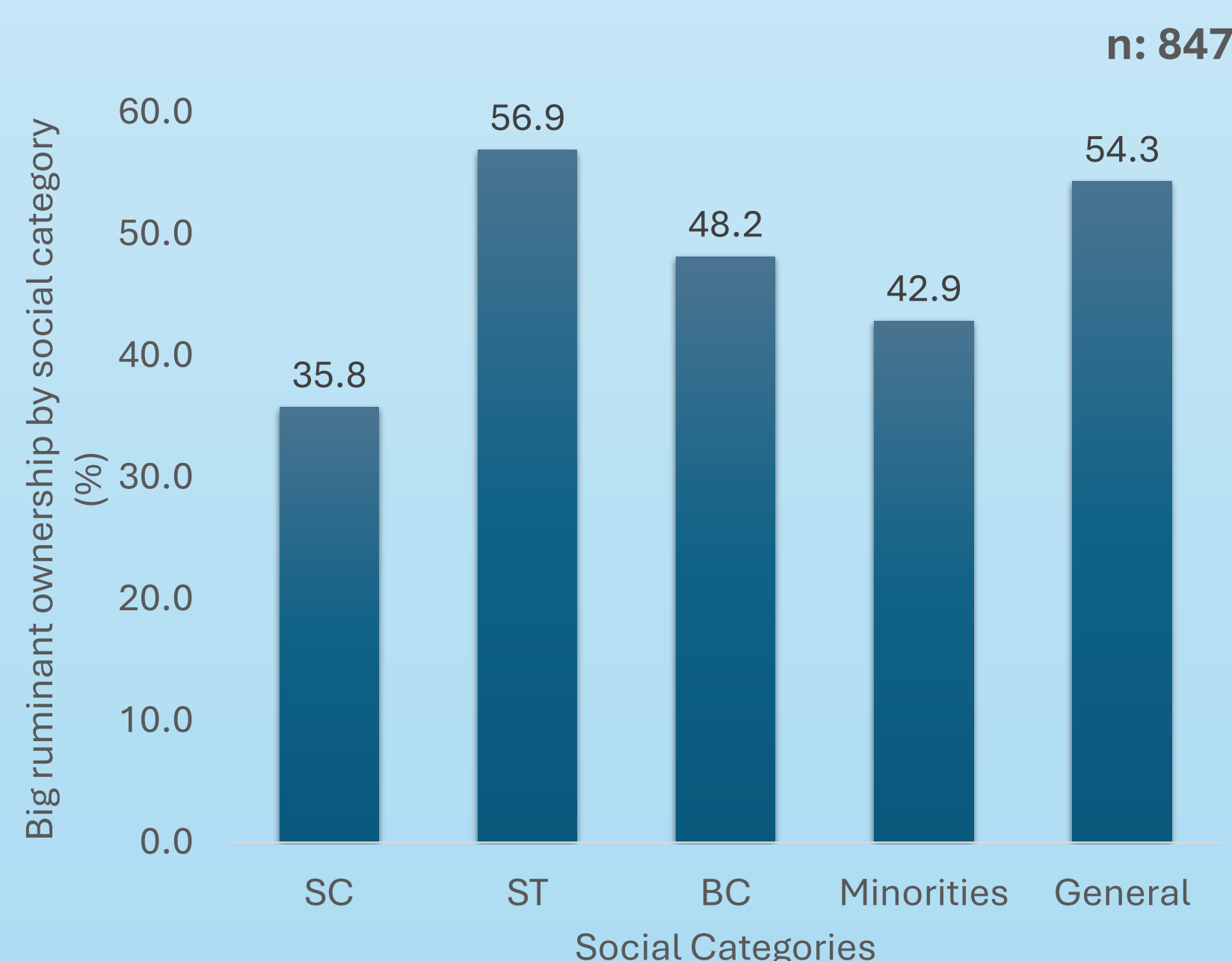
Scheduled Caste 16.2% | Scheduled Tribe 22.2% | Backward Caste 35.1% | Minority 3.3% | General 23.3%

Results

Results reveal a clear social gradient in livestock access, but not necessarily in how livestock resources are used.

WHO OWNS?

Big-ruminant ownership by social category:



Pearson chi2 = 17.0038 (df=4), p = 0.002

Ownership differs significantly across social categories, with SC households showing the lowest ownership rate (35.8%) compared with 56.9% among ST households.

HOW MUCH?

Average big-ruminant holding among owners:
Mean = 3.5 | Median = 3 | n = 418

ST (4.46) | SC (3.49) | General (3.43) | BC (2.92) | Minority (2.75)

Once a household owns livestock, differences in herd size appear less pronounced than differences in ownership.

HOW IS IT USED?

92.6%
of big-ruminant owners use dung and/or urine to prepare Natural Farming or organic inputs for their own farm

Pearson chi2 = 7.84 (df=4), p = 0.098

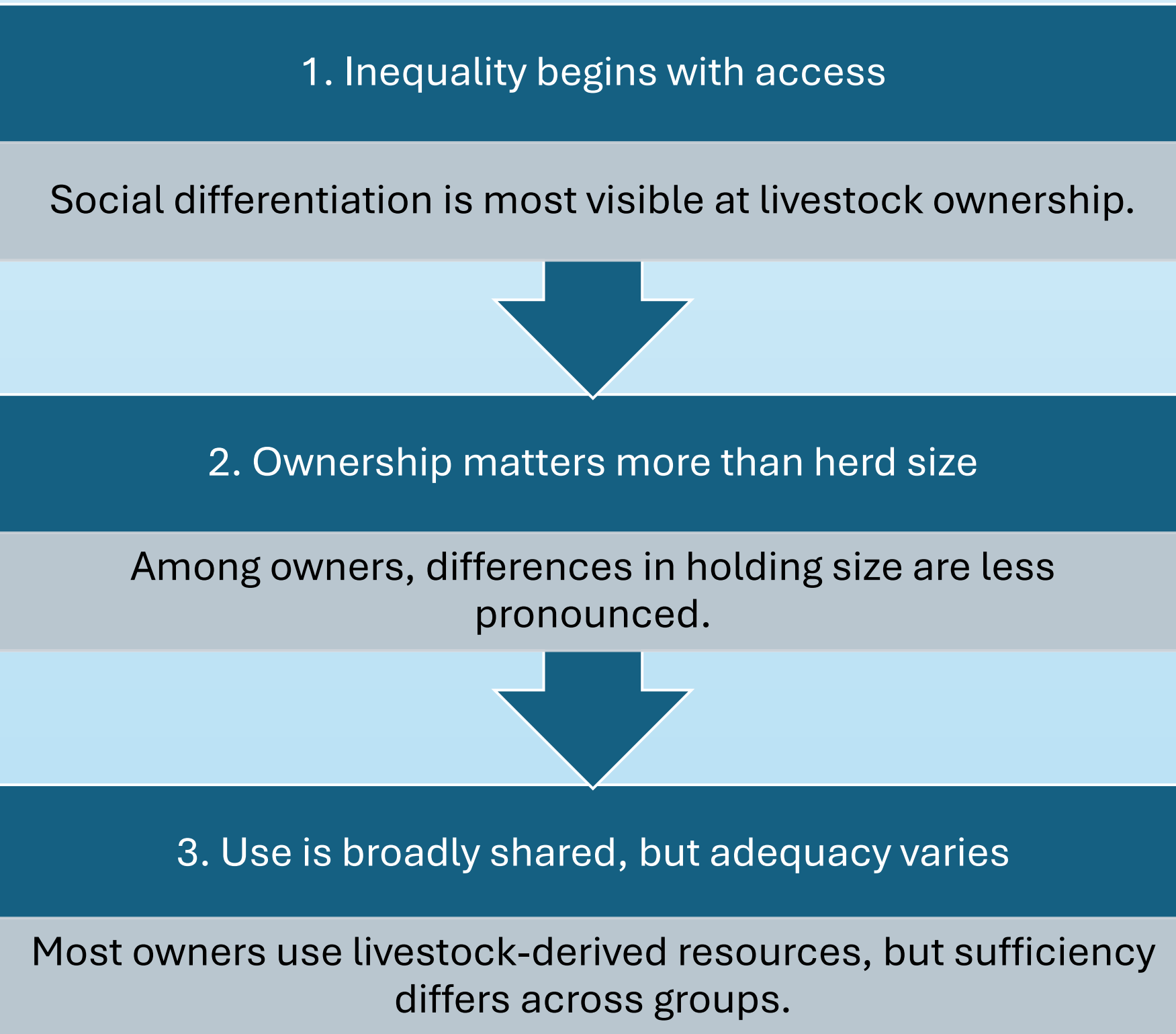
Use of livestock-derived resources is high across all social categories, with no statistically significant difference.

IS IT ENOUGH?

Sufficiency of own livestock resources:
Always – 57.9% | Sometimes – 38.5% | Rarely - 2.9% | Never - 0.7%

Pearson chi2 = 37.25 (df=12), p < 0.001 indicating that perceived sufficiency varies significantly across social categories, suggesting that unequal access extends beyond ownership to the adequacy of livestock resources available for NF input preparation.

What does it mean?



Field Photos



Livestock → resource → manure → farm system

Implication And Conclusion

Livestock access is an equity issue:

- **Target access, not only adoption:** recognise differences in access to livestock assets.
- **Create alternative resource pathways:** ensure households without sufficient livestock access can obtain resources needed for NF inputs.
- **Design for differentiated starting points:** avoid assuming equal asset bases across farming households.
- **Measure capacity to participate:** assess access to enabling resources alongside adoption of agro-ecological practices.

Livestock access differs across social groups. While ownership gaps are clear, herd size and resource use among owners are more similar. However, having enough livestock resources remains uneven. Equity efforts should therefore focus on improving access and resource adequacy.

EQUITABLE AGRO-ECOLOGICAL TRANSITIONS REQUIRE EQUITABLE ACCESS TO THE ASSETS THAT ENABLE THEM.

The equity gap appears strongest in access—and re-emerges in resource adequacy.