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

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Abstract

The transition towards resilient and multifunctional agricultural systems has accelerated in response to the ecological and economic limitations of chemical-intensive farming. Agro-ecological approaches such as Natural Farming promote the integration of crops, livestock, and locally derived bio-inputs to enhance soil health, reduce input costs, and strengthen farm-level resilience. Central to these systems is the availability of livestock-derived inputs – particularly cow dung and urine – which underpin the preparation of bio-formulations such as Beejamrutham and Jeevamrutham. Despite increasing institutional support for such transitions, the uneven distribution of livestock assets raises critical concerns regarding the inclusivity and scalability of these models.

This study investigates the relationship between social stratification and livestock ownership within the broader context of integrated farming systems. Using cross-sectional household data from Andhra Pradesh, we examine whether access to cattle, an essential component of agroecological production systems, varies systematically across caste groups. Results from a Pearson chi-square test indicate a statistically significant association between social category and ownership of big ruminants ($\chi^2 = 17.00, p < 0.01$), with Scheduled Caste households demonstrating notably lower ownership rates relative to other groups.

These findings highlight a structural constraint within agro-ecological transitions: while integrated crop–livestock systems are promoted as pathways to resilience, their adoption is contingent upon access to productive assets that remain socially differentiated. In contexts where livestock ownership is limited, particularly among historically disadvantaged communities, reliance on in situ input production may restrict participation in sustainable farming initiatives.

By situating livestock not merely as a productive asset but as a critical enabler of agro-ecological integration, this paper contributes to ongoing discussions on resilient agro-silvo-pastoral systems and inclusive rural development. It underscores the need for policy innovations that expand equitable access to livestock and decentralised input systems, ensuring that the transition towards integrated and resilient agricultural landscapes does not reproduce existing social inequalities but instead fosters broad-based participation and sustainability.

Keywords: Agro-ecological transitions, caste stratification, crop–livestock integration, livestock inequality, natural farming, resilient agriculture