

INTEGRATED ECOSYSTEMS APPROACH FOR SUSTAINABLE INTENSIFICATION OF COMMUNITY BASED SILVO-PATORAL SYSTEMS IN ARID WESTERN RAJASTHAN, INDIA: IMPLICATIONS FOR UPSCALING

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Abstract: The common pastures in arid Rajasthan, India though are critically important for sustaining livestock dominant smallholder rural livelihoods and ecosystems services, but have been severely degraded due to several factors. Among others, the stakeholders' perception of low returns on any investment of time or other resources for restoring these degraded common property resources (CPRs) is resulting into their continuous neglect. Generating sufficient on-farm evidence of enhanced biomass productivity and returns from CPRs employing integrated natural resource management and appropriate governance mechanisms are suggested strategies for enhancing community participation and influencing policies for their sustainable development. The present study aims to understand the key drivers of CPRs management and assess the potential of sustainable intensification of community silvo-pastoral systems for increased biomass production and returns in arid western Rajasthan, India. The study was undertaken in Jodhpur, Barmer and Jaisalmer districts across the annual rainfall gradient from 170 mm to 280 mm. The case-study analyses and the group-discussions were used as a starting point for facilitated community elaborations on how to adopt appropriate by-laws and identify opportunities and challenges of sustainable intensification of community pastures. Action-sites of 10 ha degraded common pastures were identified in each of the three communities to test silvo-pastoral rehabilitation options. Participatory Mozer-framework matrix accounted for local preferences and climate in selecting the plant species. The community was involved in in-situ and ex-situ water and soil conservation, species selection and monitoring, fencing, cut and carry systems and output sharing. The biomass assessment with respect to yield, species diversity, share of edible and non-edible species was carried out in pasture and control plots. The integrated ecosystems approach for rehabilitation of severely degraded community silvo-pastoral systems under arid region resulted in many-fold increase in biomass yield from 0.25-0.40 t/ha to 1.6–4.6 t/ha in the second year. The proportion of edible species increased from 15 -24% to 55 – 73%. The ex-ante analysis for a 10 year time horizon indicates payback period of about three years and over 30% IRR. Paper explores the potential to upscale the approach to at least one quarter of the common lands in west Rajasthan (1 m ha) producing about 2.5 million tons additional biomass. The study highlights the role of the structure and functions of the production system as well as social ecological system in designing appropriate NRM interventions, species selection, grazing system, market integration and institutional mechanisms.

Keywords: integrated ecosystems approach, sustainable intensification, Silvo-pastoral