



INITIATIVE ON
Mixed Farming
Systems

Organic manure drive soil productivity transitions in Himalayan range

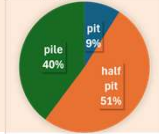
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CONTEXT

Nepal produces an estimated **65.7 million tons of farmyard manure (FYM)** annually from cattle, buffalo, yak, goats, sheep, pigs and poultry.

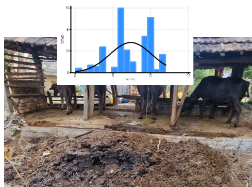
- **366,050 tons of nitrogen (N)**,
- **154,190 tons of phosphorus (P₂O₅)**,
- **276,040 tons of potassium (K₂O)**.



Yet, existing practices affect manure quality which range from feed quality, composting method, topography and terracing, and method of application.



Farmer action



Accumulate
0-12 months

FYM piled on heap, half heap/pit, and in open or covered pit.



Transport
0-4 months

Manually in *doko* (basket) (~ 25 kg)



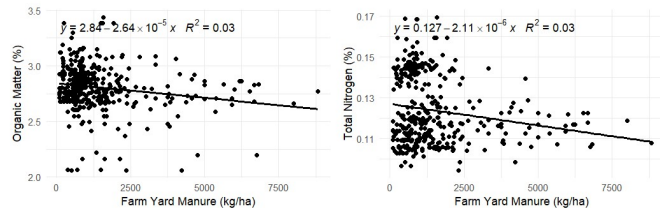
Mounds
0-4 months

Further deteriorating quality as they wait for rains to incorporate

"Our labour to nourish crops goes to the drain, benefiting Koshi river and the people it feeds downstream"



Exploratory results

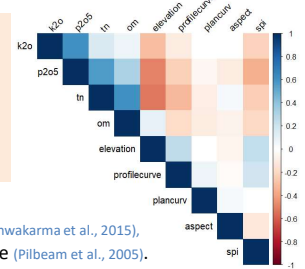


The amount of manure applied is not associated with soil organic matter and total nitrogen content.

Soil quality is influenced by topography and management

Studies have established that FYM increases

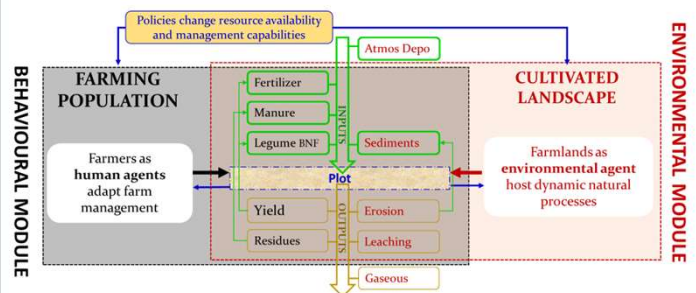
- soil organic matter from 3.3% to 3.8% (Bishwakarma et al., 2015),
- soil fertility, structure, moisture and tillage (Pillbeam et al., 2005).
- crop yields by 25% (Satyanarayana et al., 2002).



Next steps

Evaluate Human-Environmental systems dynamics in collaboration with NARC and Universities (such as Wageningen University Research):

- Nutrient input socio-economic decision
- Soil productivity gradients
- Productivity of major cereals and opportunity crops
- Simulate potential entry points for H-E system improvement



Acknowledgement

This research is being conducted as part of the CGIAR portfolio of initiatives, which is supported by contributors to the CGIAR Trust Fund. <https://www.cgiar.org/funders/>