



Farmyard manure influence phosphorus stocks in maize-based mixed farming system in Himalayas range

Shrestha S¹, Mponela P² Kafle S², Suwal B¹, Krupnik TJ²

1 Nepal Agriculture Research Council (NARC),

2 International Maize and Wheat Improvement Center

Introduction

Farmyard Manure (FYM) is the mixture of animal manure, crop residues, urine, bedding materials, fodder residues, household waste and other components. It is one of the strong linkages between crop, livestock and forests in mid-hills of Nepal. FYM is one of the viable options for sustainable soil management.

- The government has been emphasizing the improved cattle shed for sustainable farming by enhancing the quality of farmyard manure.
- Phosphorous level is high to moderate in Nepalese soil but due to rainfall pattern, slope gradients, intensive cultivation practise in mid–hills contribute soil erosion, which effect on higher leaching and run-off.

Exploratory Results

Across landscapes

The elevation gradients and soil texture do not influence phosphorous distribution (Fig 3).

Within household and farms

Farm shed distance influence on phosphorous level (Table 1). This implies that manure and phosphorous distribution are influence by farmer resource and management practised.

Table 1: Effect of the distance in phososphorous level in the soil in Khotang and Surkhet, midhills in Nepal.

Districts	Plot	Mean	Std.Dev	SE_Mean
Khotang	Near by cattle farm	115.64	80.64	6.65
	Far from cattle farm	86.46	65.3	7.3
Surkhet	Near by cattle farm	165.24	96.65	11.09
	Far from cattle farm	125.68	70.7	10.31

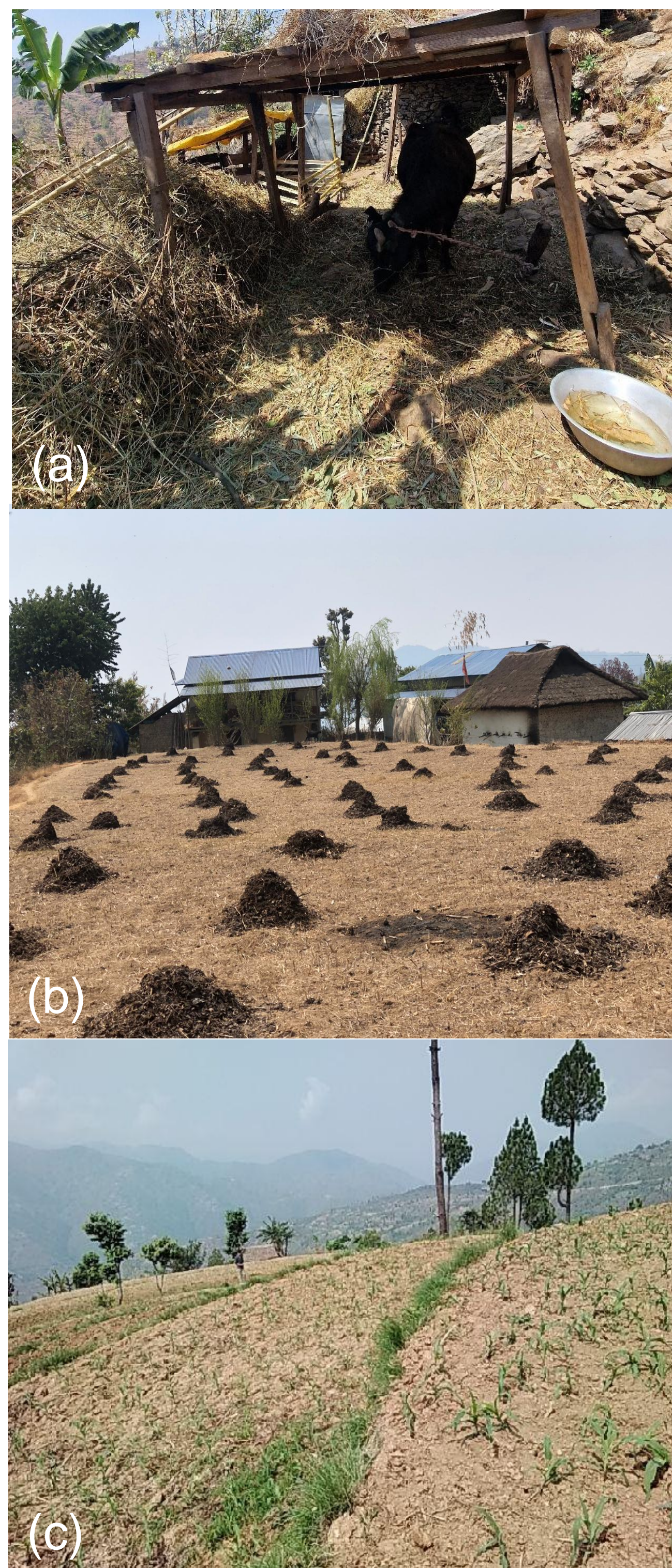


Fig 1: a) Cattle shed b) Farmyard manure application in field and c) Maize farming

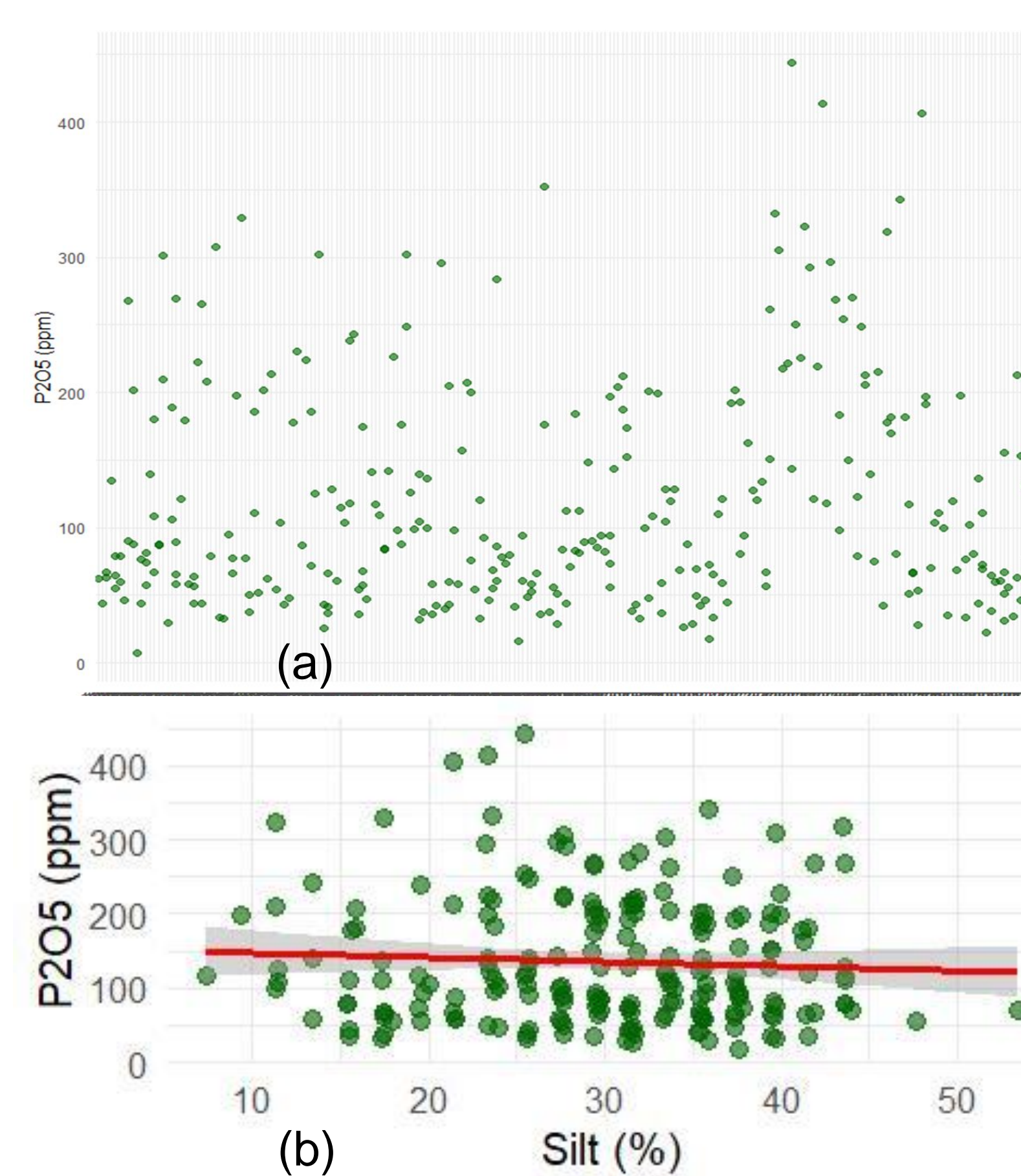


Fig 3: (a)Phosphorus availability across the elevation gradient(b)

Acknowledgements

The authors expresses deep appreciation to CIMMYT for supporting field work. We highly acknowledge the overall support from NSSRC, NARC for successful execution of the work.

Materials and Methods

The study was developed to characterise manure usage in the maize-based mixed farming systems of mid hills.

- **Sampling:** Stratified by municipality and ramdomly selected households (Fig 2).
- **Surveys:** Nearly 800 households general survey plus subsample of 350 geotagged plots for soil survey.
- Sfacrors that drive econdary data sources : Elevation
- **Analysis:** We explored factors that drive distribution of farmyard manure and associated phosphorus levels in the soil.



Fig 2: Household survey

Conclusions

- Due to improper management of manure, the soil fertility is declined regularly. There is need to understand the farm dynamics including farmer agency and viable farmyard management approach for sustainable soil management.
- The improved farm yard manure management option in farmer level would be the best options for increasing nutrient content in soil.