



# Soil Testing Survey and Soil Fertility Management Practices of Smallholder Farmers in Chitwan, Nepal

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## INTRODUCTION

Vegetable production is increasing rapidly as a cash crop in the Chitwan district of Nepal. Warm temperatures and access to water favor year-round production. Farmers are looking for improved soil fertility and pest management practices for assured production and profitability. This project aimed to increase awareness of application of agricultural inputs to optimize crop yields and limit adverse environmental impacts.



FIGURE 1. A harvest of longbeans or bodi (बोडी) at a farm in Chitwan, Nepal

## OBJECTIVES

A survey was conducted to:

- (1) Establish baseline data on soil fertility status
- (2) Document farmer practices related to soil testing and knowledge of fertilizer and pesticide use

## MATERIALS & METHODS

A soil survey was conducted on forty-six farmers' fields in April 2017 by Center for Agriculture Research and Development (CARD)-Nepal. Questionnaires were also used to gather information about farm management practices.

Procedures:

- 1) Plastic centrifuge tubes were filled to 30 mL with water and (~20 g) soil was added to make a solution of 40 mL
- 2) Soil pH and electrical conductivity (EC) were measured with a combo meter (Hanna Inst., Woonsocket, RI)
- 3) Nitrate test strips (EMD Millipore, Billerica, MA) were used for N analysis using soil nitrate quick test procedure (Hartz, 2010)
- 4) Phosphorus and potassium were analyzed by colorimetric tests

## MATERIALS & METHODS

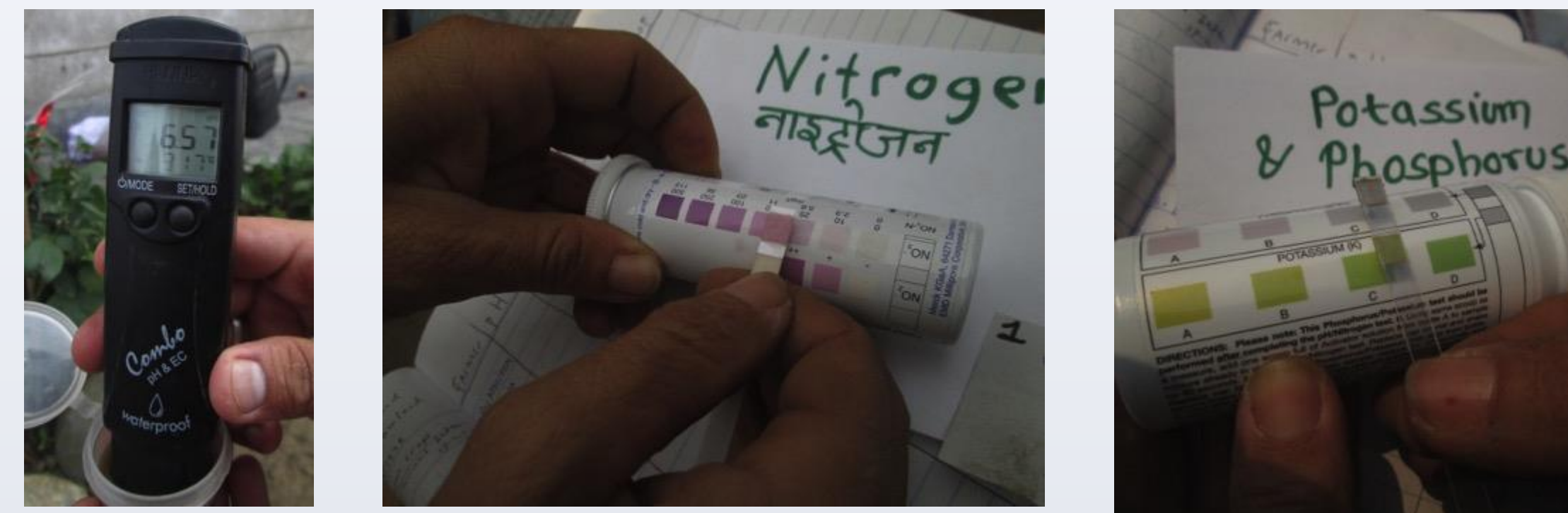


FIGURE 2. Soil pH/EC meter and N-P-K colorimetric tests for soil analyses

## RESULTS

The mean (SE) of soil pH and EC measurements for the farm sites tested was 7.02 ( $\pm 0.05$ ) and 0.31 ( $\pm 0.03$ ), respectively. Interpretations of fertility levels of N-P-K are shown in Fig. 3.

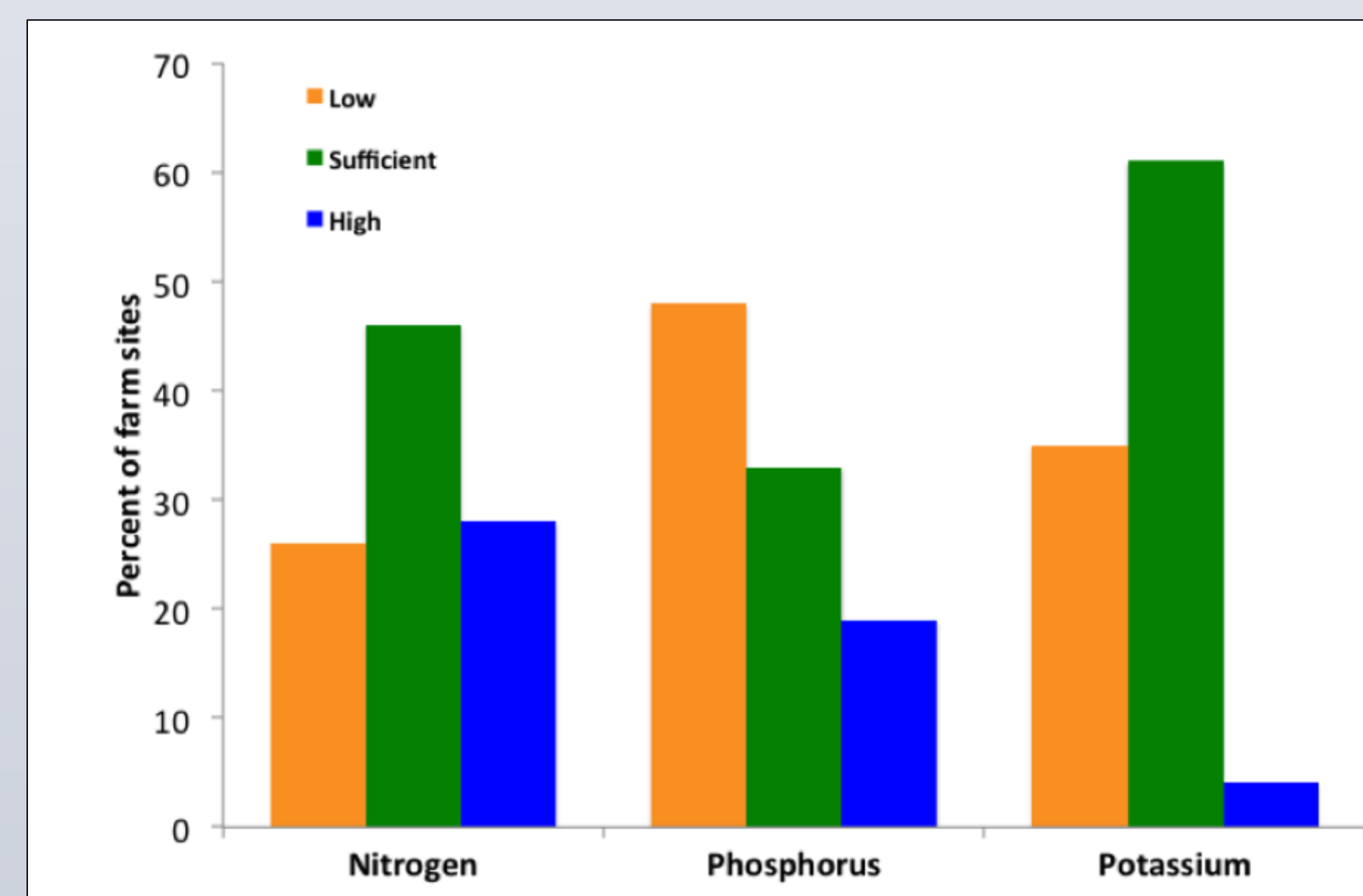


FIGURE 3. Percent of farm sites in each fertility category

Survey responses showed farmers have never tested their soil before and have not ever received training in fertilizer use. Farmyard manure, compost, urea, and diammonium phosphate were the most common fertilizer inputs. Many farmers reported they have had received training in use of pesticides due to previous CARD-Nepal workshops.



FIGURE 4. Participating Nepali farmers collect their soil samples

## CONCLUSIONS

- ◆ This is the first time these farmers had their soil tested, indicating an apparent lack of soil testing facilities near Chitwan, Nepal
- ◆ There is a need for more farmer training on practices for soil fertility management and application of fertilizers.
- ◆ These findings will guide future nutrient management decisions and have provided valuable information on knowledge gaps for CARD-Nepal and other organizations.



FIGURE 5. Volunteers help farmers interpret soil test results

## REFERENCES

Hartz, T. K. (2010). Using the Pre-Sidedressing Soil Nitrate 'Quick Test' to Guide N Fertilizer Management. Retrieved from [http://vric.ucdavis.edu/pdf/fertilization&soil\\_Using the Pre-Sidedressing Soil Nitrate 'Quick Test' to Guide N Fertilizer Management.pdf](http://vric.ucdavis.edu/pdf/fertilization&soil_Using%20the%20Pre-Sidedressing%20Soil%20Nitrate%20'Quick%20Test'%20to%20Guide%20N%20Fertilizer%20Management.pdf)

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