

Regional Dialogue

Innovations for Advancing Farmer's Use of Balanced Nutrient Application in South Asia

Concept Note

Background

Imbalanced application of nutrients applied largely through synthetic fertilizers, and poor management of soil organic matter, is a widespread problem in South Asia. Farmers across the region overapply urea, under-apply phosphate and potash fertilizers and seldom use secondary and micro-nutrients. However, the application rate is less than recommended dose in countries such as Nepal. Application of organic manure and incorporation of crop residue are also uncommon in forms other than farm yard manure. This imbalance in nutrient use results over time in lower crop yields, poor nutrient use efficiency, reduced profits and resilience of farmers' cropping systems, in addition to depletion of soil and water quality. Distortionary subsidies and the lack of scientific information and adequate extension messaging on soil health and crop nutrient requirements among farmers are two big reasons for the persistent imbalance in fertilizer use in S. Asia.

Over the last decade, countries in South Asia have tried a slew of policy changes and extension approaches to address the problem of incentives and information with varying levels of success. Some of these changes have come to stay while others were quickly reversed. For example, India decontrolled the price of P and K fertilizers in 2011 and launched a massive program to provide soil test-based soil health cards and crop-wise fertilizer use recommendations to all its 140 million farmers. Sri Lanka implemented direct benefit transfer of fertilizer subsidies to farmers in 2016 and then went back to the old system after two years. Both Bangladesh and Nepal have abolished fertilizer subsidies at different times, only to restore them after a few years.

Experts from different parts of S. Asia will exchange their experience on what works and what does not in promoting balanced use of fertilizers and explore innovative policies, technologies and extension methods suitable for the region. The daylong deliberations will focus on two key themes.

1. Role of national policy in encouraging market innovations in the demand and supply of fertilizers

The SAARC member countries vary on how they source their fertilizer need. While Nepal has no domestic production of fertilizer, other regional countries like India, Bangladesh, and Pakistan are net importers but with some domestic production. It is reported that India consumed 55 million tonnes of fertilizer in 2018 of which 28% is imported (Business Line, 2018). Of the 2.6 million MT of urea consumed in Bangladesh in 2018, just around 1 million MT (38%) is domestic production (The Daily Star, 2019) and the domestic production of urea is gradually decreasing (FAN Bangladesh, 2014).

According to the Ministry of Agricultural and Livestock Development (MOALD) in Nepal, the annual demand for chemical fertilizer currently stands around 700,000 tonnes, but the effective demand is estimated around 500,000 mt. It is estimated that the government imports only account for 30% of the total fertilizer used in the country and other 70% is supplied by informal sources and the private sector (NEAT, 2014). Non-inclusion of private sector in the import and distribution of subsidized fertilizer has been a barrier for the development of a private sector led fertilizer distribution system. In Bangladesh, the Bangladesh Chemical Industries Corporation (BCIC) operates Urea, Ammonium sulphate and DAP plants. Other private companies, through joint collaborative ventures between the government of Bangladesh and foreign companies, manufacture additional urea fertilizer and ammonia product for export. Despite the involvement of private sector, fertilizer production in Bangladesh has been shrinking in the last few years due to poor maintenance and upgradation of manufacturing plants. This is the problem that several manufacturers in India also face. Nepal also has contemplated the establishment of a chemical fertilizer plant and carried out a feasibility study. However, an expert review questioned its financial feasibility, especially with regard to cost of energy and human resources needed for such plant establishment and operation.

India, on the other hand has made significant efforts in the last 3 years to reduce the leakages in grey markets by linking all fertilizer sales to Aadhar. This strategy, when fully rolled out, may affect fertilizer supplies in Bangladesh and Nepal. However, despite large existing databases on individual farmers, the identification of beneficiaries remains a challenge for India, yet.

To boost the development of private markets, national subsidies for fertilizers also needs to be accounted for. While all countries have different subsidy structures, there is a uniform emphasis on high subsidies for Urea. Over the years, this has resulted in extremely high application rates of Urea, as against other phosphorous and potash-based fertilizers. Little emphasis has been paid on promoting new fertilizer sources (liquids, enhanced efficiency fertilizers, controlled release fertilizers, fertilizer blends, customized fertilizers, fertilizers enriched with micronutrients) to increase productivity, farmer profitability and nutrient use efficiency without compromising quality and environmental outcomes.

In this regard, the discussion and learning will focus on following the questions: What can these countries learn from each other in providing the enabling environment for the emergence of an efficient private sector led approach towards balanced nutrient management? What incentives does the private sector need and whether government subsidies act in a prohibitory or facilitative role? Can the subsidies be restructured to enable focus on adoption of other nutrients? What efforts might be needed to address low organic matter of the region's soils?

2. Scientific innovations in soil research and extension

With the advancement of new technology in detecting existing soil properties and generating recommendations, should national policies focus on the expansion and cost reduction of these technologies? In India, the government is heavily investing in the Soil Health Card scheme whereby they have conducted more than 43 million soil sample tests and distributed 163



Funded by
BILL & MELINDA
GATES foundation



million soil health cards to farmers across the country. However, the recommendations delivered to farmers based on the results of SHC follows the conventional approaches of nutrient management, predominantly the state recommendations, which were developed for larger domains and fails to cater the requirements of individual farmer. New approaches such as 4R Nutrient Stewardship (the concept of applying right source of plant nutrient, in right rate, right time and right place) and SSNM (site-specific nutrient management) would address the issues related to spatial and temporal variability of native soil fertility and help in achieving higher crop yields and farm profits besides achieving environmental sustenance, although research to identify appropriate and cost effective extension methods for these approaches can still play a role.

CSISA's research shows that wet chemistry tests of soils in the lab are slow and cumbersome and test-based fertilizer use recommendations have little impact on farmers' fertilizer use. For Nepal, it is agreed by all stakeholders that the existing blanket fertilizer recommendations need to be updated, by learning from the technological advancements in the sector. Due to changing agro-economic conditions, it is imperative to undertake an assessment of adoption of new technologies to undertake rapid and precise estimation of existing soil nutrients and provide region-specific recommendations. In terms of targeting, as per Agricultural Development Strategy (ADS), Nepal wants to implement a voucher system to target beneficiaries of subsidies. Bangladesh presently has no such scheme

Specifically, this session will aim to answer the following questions: *Can we deploy technologies, like spectroscopy to speed up the soil testing process and increase its accuracy? Can we test feasibility of such technology in countries such as Nepal and Bangladesh? Can innovative practices be used in conveying this information to farmers to assess their adoption rates? What are the constraints to implementing a voucher system of targeting in Nepal? What policy support is needed to encourage these innovations?*

This workshop aims to conclude with deliberations that help cross-country learnings from successes and failures and will enable researchers and policy makers to take concrete actions in successful implementation of policy priorities. Proceedings of the event will be used to summarize reasonable practical recommendations for gradual adjustment in fertilizer subsidies and at the same time improving the availability, access and proper use of both macro and micro-nutrients for improvement in soil health and agricultural productivity in the participating countries.