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### Scaling Integrated Soil Fertility Management Practices in Africa: The experience and lessons from the Alliance for Green Revolution in Africa (AGRA)

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Improving soil health is essential to reversing the low productivity that has plagued Africa's smallholder agriculture over the past 40 years. During this period, the yield of maize, a staple food crop in Africa stagnated at about 1.0 t/ha. To address the situation, there is consensus among the research and development community that the best approach is that of integrated soil fertility management (ISFM) which integrates organic and inorganic sources of nutrients. ISFM is a set of soil fertility management practices that necessarily include the use of fertilizer, organic inputs, and improved germplasm combined with the knowledge on how to adapt these practices to local conditions, aiming at maximizing agronomic efficiency of the applied nutrients and improving crop productivity (Vanlauwe et al., 2011; Vanlauwe et al, 2015). Towards the widescale uptake of ISFM technologies, AGRA supported mass awareness through 140,000 on-farm demonstrations, large and small, in 13 countries since 2008. Besides maize, the demos covered other staple food crops in Africa: sorghum, millet, cassava, rice, teff and several grain legumes (beans, soybeans, cowpeas, pigeonpea, chickpea, and groundnuts). The demonstrations were designed with the close participation of the communities: farmers, extension staff, input suppliers (seeds and fertilizers), and agrodealers, among others. To enhance adoption of the ISFM practices, access to input and output markets were facilitated through a value chain approach dubbed *Going Beyond Demos*. By 2017, over 5 million farmers were trained on ISFM practices and nearly half were using them. Generally, the use of ISFM technologies was found to increase the yields of grain legumes by over 100% and that of cereals by over 200%, as compared to control where ISFM technologies were not used. This is against baseline yields of 1.0 to 2.0 t/ha for cereals and under 0.5 t/ha for grain legumes. In the less rainfall areas where sorghum and millet are the predominant crops, the most promising technology is fertilizer microdosing in which about a third of recommended fertilizer rates are applied in planting holes as opposed to being broadcast. For maize, fertilizer use is generally attractive when grain yields exceed 2.0 t/ha in many regions. The *Going Beyond Demos* approach – which arose from the realization that creating awareness of appropriate soil fertility management and good agronomic practices alone was not enough to lead to wide scale adoption by smallholder farmers in Africa – is a key institutional innovation for



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improving soil fertility in Africa. Taking to scale ISFM impacts and sustaining them requires improving access to affordable credit to purchase fertilizers that are expensive in Africa, access to markets, and extension and advisory services to smallholder farmers. To a large extent, adoption is market driven as commodity sales provide cash incentives to invest in the new technologies.



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