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Crop species richness in homegardens increased in a homestead food production cluster-randomised trial in Bangladesh

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Abstract

Homegardening can contribute to both food security and dietary diversity of households by increasing availability of and access to nutrient-dense foods, particularly fruits and vegetables. We examined the impact of a Homestead Food Production programme on crop species richness in homegardens as implemented by the NGO Helen Keller International. Around 2700 women in 96 settlements of rural Habiganj, Sylhet, Bangladesh were enrolled in the ‘Food and Agricultural Approaches to Reducing Malnutrition’ (FAARM) cluster-randomised controlled trial. The Homestead Food Production programme was implemented in the 48 intervention settlements from mid 2015 to late 2018. Over the study period, trained data collectors interviewed women regularly on the number of crop species harvested in their homegardens by season (hot-dry, monsoon, and winter). During the baseline survey in early 2015, we collected annual data on crop species richness for the previous year. Over the ten seasons considered for analysis (from hot-dry 2016 to hot-dry 2019), we collected 31,639 observations of 2,699 women. We estimated the intervention’s impact on crop species richness comparing means and using multilevel regression controlling for baseline levels of crop species richness.

At baseline, respondents reported harvesting 6.1 crop species in their homegardens in the previous year, with a slightly higher crop species number in gardens of women later assigned to intervention than to control (6.5 versus 5.8), including 3.7 and 3.3 vegetable as well as 2.6 and 2.3 fruit species, respectively. Comparing the hot-dry seasons from 2016 to 2019, mean total crop species richness was consistently higher in the intervention than in the control group, peaking in 2018 and slightly decreasing in 2019, the year after the intervention ended (all $p < 0.001$): 7.8 vs. 4.0 (2016); 9.2 vs. 5.0 (2017); 12.4 vs. 6.5 (2018); 10.1 vs. 6.1 (2019). The multilevel regression analysis also showed that more crop species – mostly vegetables – were harvested in gardens of intervention than control women in 2016, 2017, 2018 and 2019 (all $p < 0.001$). In summary, the intervention had a positive impact on crop species richness in homegardens, particularly vegetables, not only during the intervention period, but also in the year after the programme ended.

Keywords: Diversity, fruits, healthy food, impact, intervention, vegetables