



A village model farmer leads a group discussion using a vegetable calendar in Nepal

The role of nutrition-sensitive agriculture in improving diets of young children: Homestead food production in Nepal

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Nutrition and agriculture context in Nepal

The prevalence of undernutrition among children under five years old has been decreasing over the last two decades in Nepal¹. However, levels of child undernutrition remain alarming, with 36% of children under five stunted, 27% underweight and 10% wasted². National levels also mask variation by subgroup; geographic, social and economic inequalities in undernutrition remain. In severely food-insecure households, for example, 46% of children are stunted and 35% are underweight, versus 29% stunted and 22% underweight in food-secure households².

Poor quality of diet, including micronutrient deficiencies, particularly in remote and food-insecure communities, is a key contributor to undernutrition. The typical rural Nepali household eats rice and pulses, with limited vegetables, fruits and animal-source foods. In addition to knowledge gaps regarding appropriate complementary feeding for young children, the availability of and

access to diverse, nutrient-rich foods remain a challenge for many. In children aged 6 to 23 months, only 47% consume the minimum dietary diversity of foods from at least four of seven food groups and just 36% meet the minimum acceptable diet nutrition indicator, which includes both dietary diversity and meal frequency².

In Nepal, 66% of the population is involved in agriculture as a primary livelihood³, while 52% of households are food-insecure and do not have access to food all year round². The agriculture sector has historically focused on staple crops (such as rice, maize, wheat and lentils) and high-value cash crops, rather than nutritionally rich ones.

Recognising that reductions in undernutrition require progress in multiple sectors, such as education, agriculture, health, and water, sanitation and hygiene (WASH), the Government of Nepal (GoN) adopted a Multi-Sector Nutrition Plan (MSNP) in 2012 which is now in its second five-year phase (2018–2022). Nepal's Ministry of Agriculture and

Livestock Development (MoALD) has given priority to improving agricultural systems for reducing undernutrition, in addition to poverty and hunger. Nepal's Agricultural Development Strategy (2015–2035) and Food and Nutrition Security Plan of Action have also prioritised efforts to increase access to and availability of nutrient-rich foods.

Nutrition-sensitive agriculture to improve diets

Development partners have aligned with Nepal's MSNP by funding and implementing multi-sector programmes to support the government's efforts. A United States Agency for International Development (USAID)-funded multi-sector programme, Suaahara (meaning "good nutrition"), is one such large-scale initiative that aims to

¹ Cunningham, K., Heady, D., Singh, A., Karmacharya, C., and Pandey, R., P. (2017). Maternal and Child Nutrition in Nepal: Examining drivers of progress from the mid-1990 to 2010s, Global Food Security.

² Ministry of Health, Nepal; New ERA; and ICF. 2017. Nepal Demographic and Health Survey 2016. Kathmandu, Nepal: Ministry of Health, Nepal.

³ Food and Agriculture Organization of the United Nations. (2016). Statistical Yearbook: Nepal.

improve maternal and child diets and thus reduce undernutrition in 3,353 wards in 42 of Nepal's 77 districts. Suaahara II has been implementing enhanced homestead food production (EHFP) to increase access to and consumption of diverse and nutrient-rich foods by supporting households to produce and consume nutritious foods (known as "garden-to-plate" foods) all year round.

Suaahara II has implemented EHFP interventions in about half (1,504 of the 3,353 wards) of the intervention areas, prioritising those identified as food-insecure by the government. To minimise constraints related to access to agricultural supplies, technical services and market linkages in these communities, Suaahara II selected and developed community-level extension workers, known as village model farmers (VMFs). Each VMF is a woman selected from the community, usually chosen in consultation with community-level government actors, such as the Agriculture Service Centre (ASC), because she has been identified as a progressive, high-performing farmer. Since 2012 more than 5,500 VMFs have been trained and provided with job aids and materials so that they can demonstrate and encourage nutrition-sensitive agricultural practices in the community.

In each community, households were selected if they had: (1) a resident pregnant woman or mother of at least one child under two years old (known as "1,000-day women"); and (2) at least 40–75 m² of land near the home. More than 100,000 selected households received a two-day basic EHFP training, a variety of vegetable seeds for three seasons (dry, rainy and winter) during the following year and five eight-week brooded chicks, and were linked with a VMF for further technical support.

Market linkages and integration with government systems

Homestead food production has been implemented in many countries since the early 1980s and has demonstrated some success in improving diets and reducing malnutrition⁴. Nepal's approach to EHFP has a number of unique features, including the unprecedented scale-up. EHFP now spans thousands of diverse communities, from lowland plains to remote mountains. This scale-up was gradual, progressing from 462 wards of seven highly food-insecure districts in 2012 to 1,008 wards of 33 districts from 2013 to 2015 and 34 wards of two districts

in 2016–2017, to cover all food-insecure communities in Suaahara's 42 intervention districts. As interventions are designed for the most food-insecure areas in these districts, scale-up beyond these areas has not been necessary.

Suaahara has extended the initial garden-to-plate model to incorporate a garden-to-market focus – particularly in areas where VMFs or EHFP-trained households produce a surplus that can be used for income-generation – to address the poverty barrier to adoption of optimum health and nutrition behaviours. Households are encouraged, for example, to use their newly earned income to buy nutrient-dense foods, and foods such as oil, flour, vegetables, fruits, eggs and chickens that enable the preparation of nutritious, complementary food recipes promoted by Suaahara. To enhance producers' market-related skills, some additional trainings on savings, credit, business plans and marketing were piloted.

Training for nutrition-sensitive agriculture and climate change

The programme also works closely with government stakeholders from both local wards and municipalities to federal level to build a sustainable, enabling environment for nutrition-sensitive agriculture. In collaboration with agriculture and livestock government stakeholders, Suaahara developed an intervention package, including training and community education materials. Nearly 1,800 government agriculture and livestock extension workers across the 42 target districts have been oriented on nutrition-sensitive agriculture in coordination with MoALD and trained as leaders to

deliver EHFP trainings and extension services in their communities.

In some areas, local governments are mobilising VMFs as facilitators to scale up climate-smart agricultural practices and build food systems that are resilient to food crisis and nutrition shocks. For example, kitchen waste-water management, rainwater harvesting, poly-house technology, planting drought-resilient vegetables, post-harvest management and solar drying are all activities promoted to minimise the adverse effects of climate change. Suaahara has been supporting VMF-led EHFP groups to register with the local government and in turn be eligible for government resources and ensure long-term engagement with the government for sustained investments.

Linking nutrition-sensitive and nutrition-specific activities

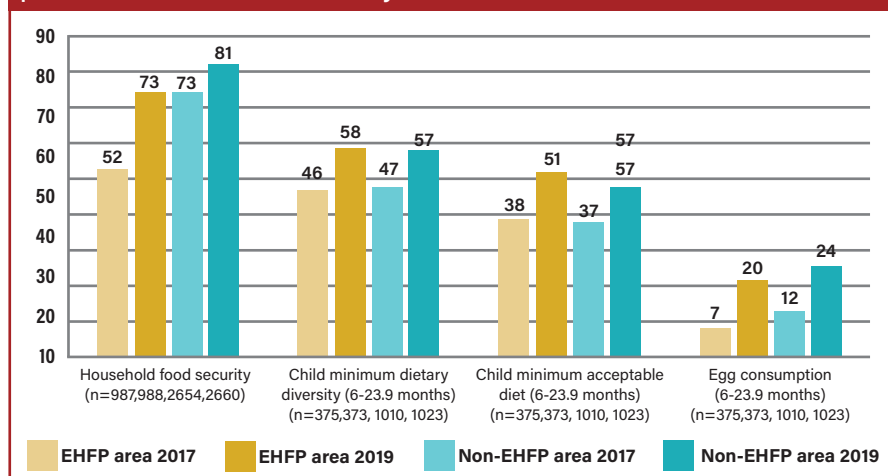
In the VMF EHFP-led groups, monthly meetings are used to talk about challenges and learnings related to agriculture and poultry rearing, as well as to encourage adoption of essential household health, nutrition and WASH behaviours; particularly food-intake behaviour, including improving child and maternal dietary diversity. VMFs not only discuss how to grow nutrient-dense vegetables and produce eggs but also how to make nutritious recipes; for example, by using pumpkin and egg in rice porridge, to reinforce the 'garden-to-plate' approach. VMFs also promote optimal complementary feeding practices, including timely introduction of complementary foods and how to make best use of locally available, diverse, nutritious foods for infants, starting at six months of age. Other strategies to improve awareness on increasing



A village model farmer at work in her kitchen garden

⁴ Haselow, N.J., Stormer, A. and Pries, A. (2016). Evidence-based evolution of an integrated nutrition-focused agriculture approach to address the underlying determinants of stunting. *Maternal and Child Nutrition*. DOI:10.1111/mcn.1260

Figure 1 MCBP Changes in food security and young child dietary patterns in Suaahara areas by EHFP and non-EHFP communities



Source: Suaahara II Annual Surveys 2017 and 2019

household food availability and accessibility include mass media (radio programmes, text messages), community events (food demonstrations, key life events) and personal communication (home visits).

To further link agriculture and nutrition, female community health volunteers (FCHVs) in EHFP wards were provided with basic EHFP training and agriculture inputs (e.g., seeds and chicks) to establish their own homestead garden and backyard poultry-rearing system. FCHVs lead monthly mothers' health-group meetings, which include discussions and counselling on appropriate infant and young child feeding; key life events to celebrate pregnancy, delivery and a child reaching six months of age; and food demonstrations to improve household nutrition and health behaviours.

Improving food security and dietary quality in EHFP

According to annual surveys in 2017 and 2019, household food security and dietary practices improved in Suaahara intervention areas. Progress in EHFP communities on these food security and dietary indicators was as great, if not slightly greater, than the overall progress in Suaahara II intervention areas, despite the fact that EHFP communities were chosen precisely because they are the more remote, food-insecure communities.

Specifically, household food security increased by 11% in Suaahara II intervention areas and by 21% in EHFP areas, versus an 8% increase in non-EHFP areas. Improvements in several infant and young child feeding indicators for children aged 6 to 23 months old were also seen between 2017 and 2019⁵. Minimum dietary diversity increased by 10% from 2017 to 2019, with a 12%

increase in EHFP and a 10% increase in non-EHFP communities. Part of this improvement in dietary diversity relates to increases in egg consumption among these children; by 13% in EHFP and 12% in non-EHFP areas. Finally, minimum acceptable diet improved by 10% between 2017 and 2019. This included a 13% increase in EHFP areas, versus 10% in non-EHFP areas (see Figure 1).

Eggs, the cheapest protein-rich food for poor families in Nepal, are not part of the traditional Nepali diet. Children under a year old are less likely to eat eggs than older children. Various factors affect egg consumption among children: lack of availability, particularly among households that are not raising chickens and do not have convenient access to markets; the perception that eggs are expensive, despite drops in prices due to recent increases in availability; lack of awareness of the nutrition and health benefits associated with egg consumption; and cultural taboos, myths and vegetarianism among some communities related to poultry-rearing, and risks of egg consumption⁶. Information promoting egg consumption and its benefits, household-level chicken ownership and increases in household income were the three major factors in facilitating egg consumption⁶.

Successes, challenges and lessons learned

Targeting communities with agriculture interventions explicitly linked to nutrition, health and WASH seems to have been an effective way of increasing household food security, maternal and child dietary diversity, and child minimum acceptable diet. However, Suaahara II has faced several challenges while implementing EHFP and targeting remote, food-insecure areas of Nepal. Qualitative programme research

revealed that poverty is a major barrier for some families, who must focus on hunger and immediate basic needs first⁶. Limited land and poor access to agricultural inputs, including water, seeds and fertiliser, create challenges for poor households to produce efficiently. Training alone would have been insufficient, particularly in these disadvantaged communities. Post-training follow-up and other technical (and sometimes material) support were necessary to enable households to adopt optimum agriculture, health, nutrition and WASH behaviours.

Moreover, collaboration is vital, particularly from government stakeholders at all levels, in order to prioritise improving access to agricultural commodities and supplies required for households to practice EHFP. For example, distribution of vegetable seeds would be more effective if water necessary for kitchen gardening was available year-round for all households. Working closely with local government to enhance its understanding and capacity on planning and implementation of nutrition-sensitive agriculture interventions seems critical to reversing the historical trend of only prioritising increased food production. Mobilising VMFs as change agents to promote the garden-to-plate model may enable local governments to improve food security and dietary diversity of households in their communities, particularly where agriculture extension services are limited.

Next steps

Scaling up evidence-based, nutrition-sensitive agriculture interventions to further improve infant and young child feeding practices across Nepal will require more advocacy and co-implementation with government at every level. Suaahara II will continue to lobby using the 'one household, one kitchen garden' campaign approach for securing food and nutrition security in coordination with local government. Investment to further develop a cadre of agriculture and livestock community extension workers (and one extension worker per village) is urgently needed to reach households in remote and disadvantaged areas of Nepal. The agricultural sector can learn lessons from Nepal's success with FCHVs and consider a similar peer-based, volunteer model to reach communities with basic services. These FCHVs could also integrate health, nutrition and WASH messages into the behaviour-change components of agriculture platforms.

⁵ United States Agency for International Development (USAID, 2020). Suaahara II Annual Survey Year 3, HKI, Chakupat, Lalitpur, Nepal.

⁶ United States Agency for International Development (USAID, 2020). Suaahara II Formative Research: Exploring Factors affecting key behaviors and ways to address them, HKI, Nepal