



## Feed the Future Country Fact Sheet

Online Version: <https://www.feedthefuture.gov/article/growing-evidence-base-behind-nutritious-leafy-vegetables>

# Growing the Evidence Base behind Nutritious, Leafy Vegetables



Fekadu Dinssa

Children from Baraa Primary School in Tanzania showing off their school garden of African indigenous vegetables grown for the school's feeding program.

With nutrition in mind, the [Feed the Future Innovation Lab for Horticulture](#) has been working with an international team of researchers to strengthen the value chain for African indigenous vegetables. Their work began in western Kenya with a food and farm training program established by the [Academic Model Promoting Access to Health Care](#) (AMPATH) health system. Doctors there knew patients who were well-nourished would respond better to medical treatment for HIV/AIDS, so the program sought to encourage clients to grow, eat and sell nutritious crops. Some of the most common leafy African indigenous vegetables – amaranth, black nightshade and spider plant – were identified as promising crops for the training program.

“We realized the potential was enormous to expand African indigenous vegetable production and meet increasing consumer demand, while addressing important nutrition and income deficiencies,” says Stephen Weller, project leader and horticulture professor at Purdue University.

Unfortunately, the scientific evidence base around these crops was sparse, so the Horticulture Innovation Lab built a project team to address research gaps in production practices, seed availability, storage, value addition, market linkages and nutrition. Led by Purdue University, the team includes partners from Rutgers University, Agribusiness in Sustainable Natural African Plant Products, the World Vegetable Center, Eldoret University, Sokoine University, the Kenya Agricultural Research Institute and Horti Tengeru.

To measure available nutrients in African indigenous vegetables, the team developed protocols for sampling these traditional crops at different stages of maturity, testing their nutritional profiles at Sokoine University in Tanzania.

“Knowing the best stage to harvest these vegetables is crucial,” says John Msuya, associate professor at Sokoine University. “While African indigenous vegetables are said to be rich in micronutrients, they also consist of substantial quantities of anti-nutritional factors – phytate, nitrate and oxalate – which can occur naturally.”

Results showed most of the nutrients tested increased as plants aged from 21 to 35 days, and the anti-nutritional factors never reached critical thresholds. Dried leaf samples were also analyzed at Rutgers University for nutritional composition.

“We were pleased to find that nightshade, amaranth and spider plant are indeed rich in vitamins and minerals,” says Jim

Simon, professor at Rutgers University. “These leafy greens are as nutritionally dense as spinach in iron, calcium and potassium – and rich in vitamins such as pro-vitamin A.”

Program results have been incorporated into training modules for more than 1,700 farmers, including a Feed the Future project in Kenya focused on horticulture. Farmer interest in these crops continues to grow, and schools are also interested in using these vegetables in their school feeding programs. This research has also come full circle, as the results have been continuously shared with AMPATH’s clients.

“So many of the vulnerable AMPATH clients, who are both nutritionally and economically at risk, have had an opportunity to be directly involved in production, consumption and marketing of these crops,” says Pam Obura, senior researcher with Purdue University and AMPATH. “Even the landless have been able to produce them in sack gardens for their own consumption.”