IMPACT: Eastern and Southern Africa

A summary of evidence for impact, 2016-2019

The World Vegetable Center (WorldVeg) conducts research, builds networks, and carries out training and promotion to raise awareness of the role of vegetables for improved health and poverty alleviation. Our work focuses on three broad areas: improving vegetable varieties, production methods, and diets. Our impact is evidenced by rigorous evaluation studies published in international peer-reviewed journals.

World Vegetable Center

WorldVeg has had a presence in Eastern and Southern Africa since 1992.

Improving vegetable varieties

WorldVeg varieties account for 50% of tomato and 98% of African eggplant formal seed production in Eastern and Southern Africa

When WorldVeg started breeding research in Africa in 1992, old tomato varieties such as Marglobe (released in 1917), Money Maker and Roma (released in the 1970s) dominated the market. Introduced from Europe and the USA, these varieties were poorly adapted to tropical conditions and unsuitable for unrefrigerated transport over long distances. WorldVeg introduced tomato varieties adapted to the tropics with excellent shelf-life. These varieties are now dominant in markets across Eastern and Southern Africa. A study for 10 countries estimated that of the region's 54 tons of tomato seed produced in 2014, 27 tons (50%) were of varieties introduced by WorldVeg. For African eggplant, this was 3.7 tons of seed out of a total market size of 3.8 tons: 98%.

Schreinemachers, P., Sequeros, T., Lukumay, P.J., 2017. International research on vegetable improvement in East and Southern Africa: adoption, impact, and returns. Agricultural Economics 48, 707-717. http://dx.doi.org/10.1111/agec.12368.

WorldVeg tomato varieties created economic gains of US$ 0.25 billion for Tanzania

In the mid-1990s, the World Vegetable Center in partnership with the Horticultural Research and Training Institute (HORTI-Tengeru) in Tanzania, released the tomato varieties 'Tanya' and 'Tengeru-97'. These varieties currently dominate the market and accounted for 87% of formal tomato seed production in Tanzania in 2014. The economic gains of these varieties for smallholder farmers and consumers in Tanzania was estimated at US$ 255 million through 2014, which is likely to increase to US$ 639 million by 2024. The internal rate of return of public investment in tomato R&D for Tanzania is 26%. Similarly, research into African eggplant, which led to the release of variety 'DB3', generated economic gains of US$ 4.9 million through 2014 with projections of US$ 27.4 million by 2024. These findings show that investments in vegetable research and development give high returns on investment.

Schreinemachers, P., Sequeros, T., Lukumay, P.J., 2017. International research on vegetable improvement in East and Southern Africa: adoption, impact, and returns. Agricultural Economics 48, 707-717. http://dx.doi.org/10.1111/agec.12368.

Dubois, T., Nenguwo, N., Dinssa, F., 2015. Processing tomatoes in Tanzania: a tale of seeds and ketchup. Rural 21: 49(3):42-43. https://www.rural21.com/uploads/media/rural2015_03-S42-43.pdf

Scaling with smallholders

WorldVeg amaranth varieties reached 231,000 smallholder farmers in Tanzania and Kenya farmers

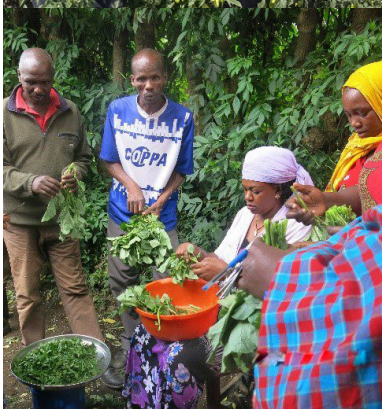
Increased production and consumption of leafy vegetables dense in essential vitamins and minerals can make a key contribution to tackling Africa's nutritional challenges. Amaranth is considered a "super vegetable" because of its high amounts of vitamin C, pro-vitamin A, iron, zinc and calcium. The World Vegetable Center and its partners in East Africa have collaborated for more than 15 years to collect, characterize and conserve the genetic diversity of traditional African vegetables, including amaranth. A study using expert panels in the main production regions of these countries estimated that 47% of the total amaranth area in Tanzania and 20% in Kenya was grown with varieties developed by WorldVeg and its partners. WorldVeg amaranth varieties reached an estimated 231,000 smallholder farm households in these countries. Seed sales data collected from private companies show that of total amaranth seed sales of 4.9 tons in 2017, 59% was based on varieties developed by WorldVeg.

Ochieng, J., Schreinemachers, P., Ogada, M., Dinssa, F.F., Barnos, W., Mndiga, H., 2019. Adoption of improved amaranth varieties and good agricultural practices in East Africa. Land Use Policy 83, 187-194. https://doi.org/10.1016/j.landusepol.2019.02.002

Vegetable seed kits distributed to 42,000 smallholder farmers

Genebanks traditionally supply crop diversity to support plant breeding through agricultural research organizations and seed companies. However, the World Vegetable Center genebank in Arusha, Tanzania strengthened its distribution service to farmers by directly distributing more than 42,000 seed kits containing over 183,000 vegetable seed samples from 2013 to 2017 to smallholder farmers in Tanzania, Kenya and Uganda. The seed kits contained seed samples of promising accessions and open-pollinated breeding lines of traditional African vegetables, and also tomato, hot/sweet pepper and soybean, usually enough to plant in a home garden. The genebank links with partners in both formal and local seed systems to provide smallholder farmers in Africa with better access to crop diversity to improve human nutrition and support climate-resilient agriculture.

Stoilova, T., van Zonneveld, M., Roothaert, R., Schreinemachers, P., 2019. Connecting genebanks to farmers in East Africa through the distribution of vegetable seed kits. Plant Genetic Resources: Characterization and Utilization 17, 306-309. https://doi.org/10.1017/S1479262119000017



Improving market access

Grouping smallholder vegetable producers in farmer organizations increased their income by 24%

Limited market information and market access are two major obstacles to increasing the income of smallholder vegetable farmers in Tanzania and most other parts of Africa. Farmer organizations can overcome these challenges by coordinating production and marketing to meet market demands. The World Vegetable Center has promoted farmer organizations in Babati District, Tanzania. An impact evaluation showed that the income of vegetable producers that are members of a farmer organization is about US$ 42 per season (+24%) higher than that of similar producers who are not members of such organizations. This shows the importance of organizing farmers in groups as part of interventions aiming to increase vegetable production.

Aku, A, Mshenga, P. Afari-Sefa, V., Ochieng, J. 2018. Effect of market access provided by farmer organizations on smallholder vegetable farmers' income in Tanzania. Cogent Food & Agriculture 4:1560596. https://doi.org/10.1080/23311932.2018.1560596

Improving diets

Well-targeted promotion of traditional African vegetables increases dietary diversity in Tanzania

The consumption of vegetables is below recommended standards in many African countries. Sometimes vegetables are seen as inferior food associated with poverty, with people preferring meat over vegetables when their incomes rise, creating nutritionally imbalanced diets. Effective interventions can increase the consumption of vegetables. The World Vegetable Center and its partners showed that demand creation activities such as promotion campaigns through road and cook shows, nutritional awareness and educational programs in hospitals, schools and markets significantly increased the dietary diversity of women of reproductive age (+15%) and children under 5 years (+36%), though not for the household as a whole. It shows that scaling up demand creation activities to encourage consumers to grow and eat traditional African vegetables could be an important element in initiatives to improve nutrition outcomes.

Ochieng, J., V. Afari-Sefa, D. Karanja, R. Kessy, S. Rajendran, S. Samali. 2017. How promoting consumption of traditional African vegetables affects household nutrition security in Tanzania. Renewable Agriculture and Food Systems. http://dx.doi.org/10.1017/S1742170516000508

Afari-Sefa, V., Rajendran, S., Kessy, R.K., Karanja, D.K., Musebe, R., Samali, S., and Makaranga, M. 2016. Tanzania. Impact of nutritional perceptions of traditional African vegetables on farm household production decisions: A case study of smallholders in Tanzania. Experimental Agriculture 52(2):300–313.

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