

# Western Modernization of Agriculture in Africa Produces Malnutrition

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Many people think that Africa is the same everywhere, actually a bit like Europe, but a bit wilder and less developed. So, to feed Africans, they should follow the West and import Western technologies like fertilizers, genetically modified crops and irrigation. The Rockefeller Foundation and the Bill and Melinda Gates Foundation therefore joined forces in 2006 to establish the Alliance for a Green Revolution in Africa (AGRA). They received financial and economic support from the governments of 13 African countries: \$1 billion in contributions, of which they distributed roughly \$524 million in grants.<sup>2</sup> The program explicitly targets small farms, aiming to stimulate them to raise the yields of their plots, and to double their incomes, by using genetically modified crops, synthetic fertilizers and pesticides. By funding PhD projects, genetic research in disease-resistant strains of maize and other university research projects, AGRA's general strategy is to reduce poor farmers' food insecurity by stimulating science. At first, former UN Secretary General Kofi Annan chaired the foundation; after his death Agnes Kalibata, Rwanda's former Minister of Agriculture and Animal Resources, took over. The goals of the foundation are "to double yields and incomes for 30 million farming households by 2020."<sup>3</sup>

The governments of Mali, Burkina Faso, Niger, Ghana, Nigeria, Uganda, Ethiopia, Rwanda, Kenya, Mozambique, Tanzania, Zambia, Malawi participated with millions in subsidies, and with governmental regulations, forbidding for example indigenous crops like millet and sorghum and discouraging organic fertilizers. By 2020, the small farms of the participating states were supposed to be out of poverty, malnutrition and hunger were to have been halved, and prosperity to have increased. Louise Fresco, president of Wageningen University Research and a well-known agri-food professional, also thinks that science-driven, large-scale agriculture is possible everywhere in Africa. Mechanization, robotization and irrigation were to be rolled out even more intensively.<sup>4</sup> These ideas aren't utopian: this approach to agriculture is being realized in many developing countries in the large plantations producing crops, mostly fodder for Western animal production. Sometimes these plantations are obtained through land grabbing.

Evaluations after 14 years show, however, that the results of AGRA for the targeted small farms are quite meager. The implementation of the AGRA program and the spending of billions of dollars, partly by African governments, led to an enormous reduction in the yields of crops used by local farmers and consumers. Indeed, the yield of maize for export to the West increased, mostly due to expansion of

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<sup>2</sup> <http://www.agra.org/grants>.

<sup>3</sup> <http://www.agra.org/>.

<sup>4</sup> <https://www.volkskrant.nl/kijkverder/2018/voedselzaak/artikelen/louise-fresco-zoals-er-een-klimaataakkoord-van-parijs-is-moet-er-ook-een-groot-voedselakkoord-komen>.

agricultural areas, but yield of local crops, well adapted to the climate and offering sufficient nutrients, declined, e.g. millet minus 24%, sweet potatoes minus 7% and groundnuts minus 23% (*False Promises* 2020, 29). Poverty and malnutrition increased. These results are reported from various quarters, and the cause of increasing malnutrition is identified as a one-sided diet based on meals of one crop, mostly maize.<sup>5</sup> For example, in Tanzania, the number of undernourished people was 13.6 million during 2004-06 and 17.6 million during 2016-18, an increase of 4 million. As *False Promises* (2020, 21) testifies:

During the AGRA period, extreme poverty remained high, falling only three percent to a shocking 60 percent between the years 2006 and 2018. Although undernourishment decreased by nearly eight percent to 37 percent, the number of severely hungry people increased by 500,000 to 4.5 million. It is notable that poverty reduction in Rwanda was more effective in the 12 years before AGRA, when the number fell by 500,000 people.

The AGRA program has been criticized from various points of view. The Food & Business Research Program, supported by Dutch national science organizations, points out that the unilateral focus on export crops comes at the expense of improving water and land use for crops that are eaten by the local population. Moreover, the type of water management used with these export crops is irrigation with open water channels and sprinkler systems which, given the extreme heat of the tropics, causes high evaporation. Dutch researchers, by contrast, have aimed to improve local crops and practices, like soil conservation methods, integrated pest management, and water management by constructing swales, i.e., shallow trenches planted with water-absorbing berry and fruit bushes that retain rainwater that would otherwise be lost running down the slopes of hilly landscapes.<sup>6</sup>

In much more detail, Timothy Wise and others from the Institute for Agriculture and Policy based in the US and Germany have examined the results of the AGRA program. Their report, *False Promises* (2020), shows that the AGRA program did not keep its promises.<sup>7</sup> The strong emphasis on maize exports meant that more maize has been produced by taking up more land, but malnutrition due to lack of nutrients has increased by 30% since the start of the program. According to the report:

Data clearly shows that maize support programmes are increasing total maize production far more through expansion than through productivity improvements. Some countries, such as Zambia, have nearly doubled the area planted with maize as a result of the Green Revolution incentives to plant the crop, yet their productivity growth over the 12-year period is just 27 percent (*False Promise* 2020, 20).

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<sup>5</sup> <https://www.iatp.org/blog/202008/replacing-hunger-malnutrition-former-un-official-calls-out-failing-african-green>; <http://www.ipsnews.net/2020/08/address-malnutrition-food-insecurity>.

<sup>6</sup> [https://knowledge4food.net/wp-content/uploads/2020/07/FBRsynthesis07\\_SmallScaleFarmers\\_paper.pdf](https://knowledge4food.net/wp-content/uploads/2020/07/FBRsynthesis07_SmallScaleFarmers_paper.pdf).

<sup>7</sup> See also [https://sites.tufts.edu/gdae/files/2020/07/20-01\\_Wise\\_FailureToYield.pdf](https://sites.tufts.edu/gdae/files/2020/07/20-01_Wise_FailureToYield.pdf).

Prosperity in the 13 countries has also not increased. The production of millet, grown in mixed cultivation with legumes, decreased by 24% (*False Promises* 2020, 18, 20). Millet, but also groundnuts, sorghum and nuts require low input and are often subject to innovative practices of local farmers. These crops are better adapted to local soil and weather conditions. But in Rwanda, for example, farmers who grow those ecologically responsible crops were even fined! The enormous space, energy and water use of the export crops hampers the work of the vast majority of small, potentially sustainable and biodiverse farmers.

Another US-based NGO, AGRA Watch, signals the same problems and shows that the specific scientific, top-down approach of the AGRA program is not neutral and does not pay attention to, for example, scientific research on agroecological and nature-inclusive forms of agriculture. It argues for more innovations in that direction.<sup>8</sup>

The AGRA program seems to give priority to the lab, on the premise that scientific results, producing synthetic fertilizers for example or improved seeds of export crops like maize, flow through and can make a big difference to farming practice (“trickle down science”; Reidpath & Allotey 2019). The poor results of the AGRA program show that this is a misconception and that, in agricultural matters, local conditions and local challenges must first be considered. The program doesn’t pay attention to local markets and processing of crops; instead, it takes for granted that producing for global markets automatically improves the livelihood of poor farmers. However, firstly, participating farmers had to buy more inputs (seeds, synthetic fertilizers) and secondly, were more dependent on volatile (global) markets for their returns. Rising poverty is the result. Interestingly, already Titonell & Giller (2013, 88) had warned that a top-down science approach would not work to improve the welfare of small farmers: “There is a need for targeting in a “best fit” approach from a basket of options, rather than pushing best-bet approaches or “silver bullet” solutions.”

The 2020 *State of Food Security* (FAO et al. 2020) report generally shows that malnutrition is on the rise and that agroecological approaches and sustainable crops with a lot of nutrients help against this. Crops and trees are selected in mix cultures according to their fruit-bearing capacities and their potential to keep common enemies at bay. Diversity of local crops has a positive effect on diverse, healthy diets and reduces malnutrition caused by insecure dependency on one crop. During my travels in Ghana and Uganda I have seen quite a few farms with variations of this approach.

Interestingly, in some Western European countries, like Belgium and the Netherlands, and in the United States, an alternative to large industrial farming is a type of agriculture that focusses on agroecological

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<sup>8</sup> <https://cagj.org/2020/08/new-agra-watch-report-messengers-of-gates-agenda-a-case-study-of-the-cornell-alliance-for-science-global-leadership-fellows-program/>.

approaches and a large variety of crops and trees in the field. Some of these approaches are inspired by the African example of mixing forests and crops, what is called agroforestry or food forest (Leary 2017).

So, there are good alternatives that counteract both malnutrition and the reduction of biodiversity (Tittonell et al. 2016; Rupak et al. 2017; Bezner Kerr et al. 2019). German and French development organizations and the aforementioned Dutch program are committed to these agroecological approaches, which are closely linked to local knowledge, practices and markets. For example, many different crops (e.g. sweet potato, yam, cassava, amaranth) are usually grown on small plots of land at the same time, thus providing a versatile, diverse daily menu with many nutrients. These programs work on innovations and knowledge platforms that are not aimed at export but at the improvement of local and regional production and distribution. The Slow Food 10000 Gardens Facebook page gives a vivid picture of these developments.<sup>9</sup>

The results of these programs look good, which is why the European Union is urging the high-level forum Africa-Europe 2018 to support mixed cultivation with local crops by small farmers.<sup>10</sup>

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<sup>9</sup> <https://www.facebook.com/groups/slowfood.gardens.africa/>.

<sup>10</sup> [https://ec.europa.eu/info/news/promoting-climate-action-and-improving-access-private-finance-among-recommendations-rural-africa-2018-dec-14\\_en](https://ec.europa.eu/info/news/promoting-climate-action-and-improving-access-private-finance-among-recommendations-rural-africa-2018-dec-14_en).