beyondbrics **Food Security**

Governments must raise, not cut, funding for food security

Research into future-proof crops is needed to combat hunger, conflict and migration

A field of wheat in the Rift Valley near Narok, Kenya © Bloomberg

YESTERDAY Matthew Reynolds, CIMMYT

comments

Investing in aid is a bargain. Using less than 1 per cent of an advanced nation's budget to promote health, security and economic opportunity overseas can stabilise vulnerable parts of the world where civil wars and severe shifts in climate are resulting in mass migration.

Yet instead of uniting to tackle such issues at source, governments are beginning to withdraw support.

This bodes very badly for global food security — the foundation of a stable and productive society.

Science has been the driving force in helping us produce enough food throughout the past decades. In the 1950s, the US initiated globally co-ordinated efforts to improve crop productivity, culminating in a "Green Revolution" that saved more than 1bn people from starvation and still boosts domestic and international food production.

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Emerging markets guest forum

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But researchers working on such solutions today are as chronically underfunded as their peers working on the front lines of aid delivery. While they may administer vaccines to prevent outbreaks of disease, we are working on future-proof crops to prevent outbreaks of famine.

At the International Maize and Wheat Improvement Center, we have continued the work of the Green Revolution through programmes such as the International Wheat Improvement Network (IWIN).

It is not common knowledge, but without IWIN our daily bread could disappear. This transnational web of 700 field testing stations is responsible for yield gains and resistance to diseases in about half of the wheat grown worldwide, particularly in less developed countries. It has helped us avert disaster many times over, preventing diseases such as stem wheat rust from wiping out entire wheat harvests.

Twelve distinct wheat-growing environments are studied, representing a range of temperature, moisture, and disease profiles. Research and breeding is conducted at strategic research hubs to develop around 1,000 new high yielding, disease-resistant lines annually, which are then distributed freely as an international public good.

Superior to environmentally controlled research facilities such as greenhouses or enclosed chambers, these field testing hubs accurately represent cropping situations. Technological advances in the use of drones and satellites for measuring plant characteristics have in recent years added to the efficiency of breeding operations.

The hardy and high-yielding wheat crops identified by IWIN have improved food security and livelihoods on a major scale in the developing world and have saved more than 20m hectares of natural ecosystems from cultivation.

Was the investment a bargain? Economic analysis shows that IWIN's outputs are worth between $2bn and $3bn a year in terms of increased crop productivity, spread among hundreds of millions of resource-poor farmers and consumers. This equates to a return on investment of a staggering 100:1.

We need more, not fewer initiatives like this. Many countries face common challenges in crop improvement, such as outbreaks of wheat stem rust, or increased temperatures. Leaders in agricultural research agree that the best way to accelerate finding solutions is through increased international collaboration.

Working only at a national level is inefficient. Efforts are duplicated and timeframes are too long. It takes between 10 and 20 years for a new crop to be developed and released.

A Global Crop Improvement Network — composed of transnational field testing facilities covering all crops and linked to worldwide expertise — could be the revolutionary measure we need, to understand and model crop responses to environments and accelerate adoption of vital technologies to end hunger.

Many other problems of global concern could be tackled in this way. For example, given rising levels of carbon dioxide it would make sense to develop a public network of research facilities that experimentally increase CO_2 in the field to levels predicted in 10 or more years from now. It would also be the ideal vehicle to invest in (and disseminate) highly nutritious, underutilised crops, such as quinoa, for example. Having evolved in the Andes this is very hardy and its seeds contain more protein than any cereal.

Half a century of international collaboration in crop research involving scientists, farmers, policymakers, charities, and many others has led to huge strides in nutrition and food security on a global scale. The goodwill among scientists exists to maintain such networks, but the political will is apparently lacking.

Unpredictability of funding limits the long-term vision and planning needed to meet a challenge such as feeding the world. Our leaders in both public and private sectors can go down in history as saviours if they act now to save the institutions required to guarantee a well-nourished and so a more politically stable planet.

If not, history may take a tragic turn, with humanity's ability to feed itself so undermined that we will not be able to save ourselves.

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