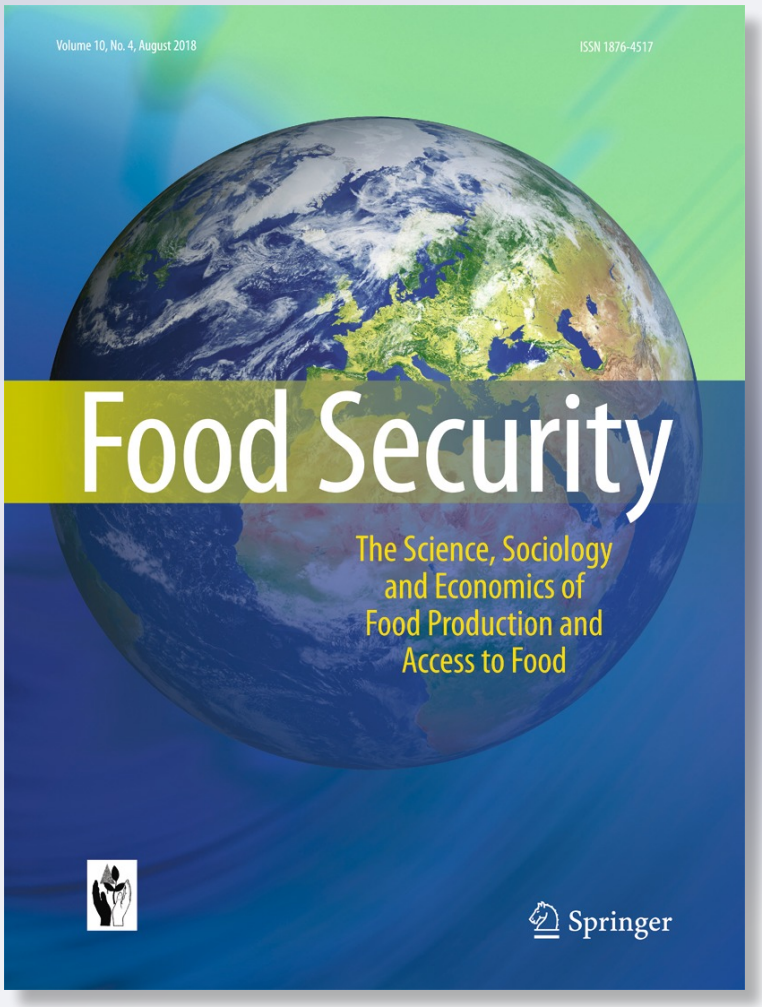
Michael Clegg (Project Co-ordinator and Chair of Editorial Committee), et al.: Challenges and opportunities for food and nutrition security in the Americas - the view of the academies of sciences. IANAS regional report

Stephen R. Waddington

Food Security
The Science, Sociology and Economics of Food Production and Access to Food

ISSN 1876-4517
Volume 10
Number 4

Food Sec. (2018) 10:1131-1134
DOI 10.1007/s12571-018-0816-1



Springer

Food Security (2018) 10:1131–1134
https://doi.org/10.1007/s12571-018-0816-1

BOOK REVIEW

Michael Clegg (Project Co-ordinator and Chair of Editorial Committee), et al.: Challenges and opportunities for food and nutrition security in the Americas - the view of the academies of sciences. IANAS regional report

Inter-American Network of Academies of Sciences (IANAS) and others: November 2017, 607 pp. ISBN 978-607-8379-29-3

Stephen R. Waddington [1]

Received: 18 April 2018 / Accepted: 11 June 2018 / Published online: 14 July 2018

Eduardo Bianchi, et al.: Opportunities and challenges for research on food and nutrition security and agriculture in the Americas - regional analysis prepared from country assessments by IANAS

Inter-American Network of Academies of Sciences (IANAS) and others: February 2018, 38 pp. ISBN 978-607-8379-29-3

Readers looking for an up-to-date, comprehensive, integrated, scholarly and well-presented account of the status, challenges and opportunities of general agriculture, food production and food and nutrition security in the Americas, with an emphasis on the roles of science and technological innovation, should study these two books. They are available on-line at www.ianas.org as free downloads in Spanish or English. If, however, you are looking for a series of state-of-the-art reviews of food security and nutritional security research and practice in these countries, then for the most part you will have to look elsewhere.

The books are products of a major initiative by the Inter-American Network of Academies of Sciences (IANAS) that brought together around 210 contributors from member National Academies of Sciences in workshops in Mexico, Peru and the USA during 2016 and 2017 to examine the state and challenges of food and nutrition security in the Americas. This IANAS initiative is one of four parallel regional academy network working groups on food and nutrition security organized by the global InterAcademy Partnership (IAP). The others are for Africa (NASAC), Asia (AASSA) and Europe (EASAC). The IAP plans to produce a global synthesis of the four regional studies in due course.

The aim of the project was 'to assess the outlook for food and nutrition security over the next fifty years within the Americas, with the goal of informing national policy makers of critical issues and potential options for each major country of the Americas'. The Foreword and Introduction indicate that the working group for the Americas addressed a set of common themes, which had been agreed upon at global meetings of the IAP in 2015. Although it is also indicated that the regional working groups had considerable flexibility to craft their studies, it does appear that those global guidelines had a large influence on the scope and emphasis of the subsequent country reports and the regional analysis.

According to the IANAS website, the work in the Americas is ongoing, with plans for follow-up activities. For example, there will be a workshop on 'Challenges and Opportunities for Food and Nutrition Security: The View of the Academies of Sciences', to be held at the Stock Exchange Building of Rosario, Argentina on July 24 and 25, 2018, and hosted by the National Academy of Exact, Physical and Natural Sciences in Argentina.

While the titles of these books focus on food and nutrition security, their actual content demonstrates a very broad view of the subject. In the regional analysis for instance, food security and nutrition security (in a narrow sense) are covered mainly in two chapters called 'Nutrition and public health: risks and opportunities for the future' and 'Science and policy context', and to some extent in 'The way forward'. But the bulk of the regional analysis is comprised of other chapters

✉ Stephen R. Waddington

[1] Cuernavaca, Mexico

that provide broad background on 'The Americas', and address 'Resource and ecosystem characteristics', 'National agricultural research systems', and 'Opportunities for science, technology and innovation to increase the efficiency and competitiveness of sustainable agricultural production in the Americas'.

Most of the main book consists of a series of 19 country reports on broad-sense food and nutrition security in the Americas and a combined report for the smaller countries of the Caribbean. These are supported by special feature chapters on topics such as the role of the western hemisphere in feeding the world, and the gender dimensions of food security, along with boxes on specific topics ranging from biotechnology applications in the Caribbean, to insects as a food source, super foods in Peru, and bio fuels policy in the USA. To complement the detail, there is also a chapter with an Executive Summary and Major Findings. This summary is developed further in the second volume with the regional analysis.

I found the country reports to be an excellent source of up-to-date information on many aspects of agriculture in the Americas. They provide a lot of material that would not be out of place in books on general agriculture, sustainable crop production, agro-environment management, institutional systems, policy support, and so on. These country assessments were put together by panels of experts from the national Academies of Science and offer what can be regarded as generally mainstream views on the many components of these complex integrated topics. Where possible, they are based on reviews of available studies, which are of variable depth and quality across the different countries, and there does not appear to have been any new research commissioned and reported on as part of this initiative.

Although a similar organizational structure and content seems to be followed by most of the country studies, the emphasis on more traditional forms of smallholder agriculture and local food and nutrition systems, compared to technology-based large-scale commercial agriculture and market-orientated food systems, does vary across the countries. Since I am more familiar with Mexico, I first had an especially close look at the Mexican chapter.

It begins with a general assessment of the diverse agricultural base and activity in Mexico. Then there is an emphasis on technical capacity with agriculture, including specialized research and institutional capacities, with the need identified to add to these resources, but more-so to manage and guide them in far more efficient and effective ways. This is followed by an assessment of physical resource limitations to agriculture (principally water and soils, but also energy), agro-ecosystem/biodiversity challenges, and those related to climate change and resilience to extreme events. There is a major section on technology and innovation, including biotechnology, with examples developed from the vegetable sector, with animal health, plant pests and diseases, and on bio-fertilizers. Then there is another large section on enhancing the efficiency of food systems, with an emphasis on technology-based agricultural production, infrastructure improvement and a welcome consideration of reducing food waste and raising energy efficiencies in agriculture.

That is followed by an assessment of public health concerns, concentrating on food-borne gastrointestinal diseases (a big issue in Mexico), and the crises with obesity and Type 2 diabetes. This important section also examines recent responses such as a tax on sugary drinks, and educational awareness and incentives to recover the traditional Mexican diet based on maize tortilla, beans, and a diversity of fruits and vegetables. The final major section addresses political considerations and covers in some detail a range of government initiatives and policies related to agricultural development, food security and health. These include agrarian reform and sustainable rural development, agricultural subsidy and credit programs, nutrition-sensitive agriculture and healthy food/diet campaigns, targeted food security and poverty alleviation programs, agricultural product value addition and market development, support to agro-technological research and innovation, agro-ecological land use and ecosystem conservation, and so on. The chapter rounds off with a short final section that summarizes the general agricultural production and sustainability challenges likely to face Mexico over the coming 50 years.

While these later sections of the chapter do provide some coverage, given the prevalence and severity of public health, nutritional disorder and food insecurity concerns for the urban poor and marginalized rural communities in Mexico, I had hoped to see a more in depth assessment of these issues, including the effectiveness of current efforts and how to better address them through improved and targeted access to appropriate foods and nutrition.

To get a sense of how these concerns are being handled elsewhere, I also looked carefully at the reports from several of the countries with the lowest Human Development Index, and the highest levels of food insecurity, including Honduras, Guatemala, Nicaragua and Bolivia. Some of the same human nutritional and health concerns and trends found for Mexico are noted for these countries, with similar causes, but the capacities to address these problems are often more constrained.

The reports on Guatemala, Honduras and Bolivia stress the continued prevalence of under-nutrition and its effects. The multiple contributors to food and nutrition insecurity are particularly well described in the chapter for Honduras where these issues are widespread and deep. That country report also presents detailed information on diet content and diversity, and nutrition in rural and in urban areas. It seems there has been little recent progress on most measures, and the report highlights the urgency to do far more.

Several of these country reports, and especially that for Nicaragua, describe the importance and contributions of smallholder family agriculture to food autonomy and sovereignty, food security and nutrition. The Nicaraguan report also highlights some novel support mechanisms employed in that country to encourage agro-ecologically based sustainable small-scale agriculture to raise the local diversity of foods and reduce poverty. Despite these mentions, I had expected to see more on the roles of sustainable and diversified family agriculture in many of the country reports; this surely has to be considered and supported widely in the Americas as a pathway to continued food and nutrition security for large sectors of the population.

Clearly there is a lot still to be done in the more food insecure countries. It is encouraging that there is evidence that the right sorts of programs and policies can make a difference. This is apparent in the chapter from Chile, where a strong research base coupled with sound implementation of a suite of appropriate food and nutritional policies and practices do appear to be improving the situation.

I found it hard to quibble with the main points made in the chapter called Summary and Major Findings, which is a key part of the regional analysis. I quote the following '.....Science, Technology and Innovation (STI) have played, and will continue to play a key role in agricultural development, in the provision of nutritious foods and the guarantee of food security. .....the Americas, like other regions of the world, face major challenges in environmental degradation, including the degradation of essential water and land resources. Addressing these challenges will require continued STI investment, together with adequate training for a new generation of qualified professionals as well as the implementation of more effective evidence-based policies at the governmental and inter-governmental levels. .....broader international cooperation is essential to achieving food and nutrition security for all countries and peoples.'

Other major points in this summary recognize that: a) the Americas have abundant natural resources (agro-biodiversity, arable land and water) for the future; b) the capacities of national agricultural research systems, infrastructure, investments in human capital, financing and the roles of public and private sectors are very variable in the region; c) future growth in food production and public health requires the more efficient use of water resources; d) water, food and energy resources need more integrated management; e) the massive amounts of deforestation and environmental degradation in Latin America need to be addressed; f) more research on climate change is needed to reduce greenhouse gases from agriculture and develop climate adaptation and mitigation strategies; g) for the future it is necessary to produce more healthy food without increasing agricultural area, while also reducing wastage; h) in the Americas, malnutrition, food insecurity and obesity/food abundance/related diseases, coexist; i) STI-based progress with agricultural production and food security in the region has been substantial in recent decades, but future progress will depend on greater regional and global cooperation and wide implementation of effective evidence-based policy; and j) that gaps in public support can be prioritized by monitoring shifts in STI investment from public to private sectors.

The regional chapter on 'Opportunities for science, technology, and innovation to increase the efficiency and competitiveness of sustainable agricultural production in the Americas' provides an excellent synthesis of current work, needs and opportunities to ensure the region produces the right types and amounts of agricultural products in a sustainable way into the future. In the chapter on National Agricultural Research Systems in the Americas, we find the following: 'Interdisciplinary and transdisciplinary research is not sufficiently encouraged and, in some cases, remains marginal, where the individual disciplinary approach still prevails. In many countries, the link between scientific research and the needs of vulnerable populations in terms of food and nutrition security is weak.' These are key areas that need to be addressed to raise the effectiveness of food and nutrition research for the future.

Those of our readers still looking for key insights on food and nutrition security in a narrower sense are best directed to the (rather short) chapter on 'Nutrition and public health: risks and opportunities for the future'. Here you will learn that considerable food insecurity (which is greater in vulnerable groups such as children, and in food import-dependent countries such as those in the Caribbean) still coexists with highly developed agricultural production and export sectors in some of the countries. The chapter notes that significant progress has been made in reducing the incidence of several micronutrient deficiencies such as iodine, iron and zinc in the region, but the problem of obesity and its related health risks has grown to epidemic levels in many countries. This has led to a range of food provision, nutritional/diet management and health care responses, which are clearly failing to cope in many instances. The increased promotion, availability and consumption of processed foods and drinks, coupled with sedentary lifestyles, in urban and also in many rural areas has overwhelmed these initiatives. Obviously, far more needs to be done to reduce the lure of unhealthy food, and to effectively promote healthy foods, diets and lifestyles. Food-borne infectious disease is also highlighted as a widespread and persistent public health concern for the Americas that is related to both the expansion of industrialized food processing and marketing, and to poor sanitation and unsafe water supplies in poorer communities. Yet, some will wonder why this chapter gets just over two pages when others are given far more space, even though there is some additional consideration of policy aspects of these issues in the chapter called 'Science and policy context'. What I missed in these chapters was an explicit attempt to identify, assess and promote best practice to ensure

the provision of and access to healthy foods to address food and nutrition insecurity for vulnerable groups and in marginal communities. This could have included an examination of success from other parts of the world, especially Asia.

To round things off, the chapter on 'The Way Forward' gives a generally upbeat assessment of the future for food and nutrition security in the Americas. The overall conclusion is that the region should have little difficulty in meeting the needs of its people for quality foods given the projections for modest growth in human population and improved public health in the coming decades. That said, the chapter rightly notes that the impacts of a changing climate and other environmental changes, increasingly risky for agriculture, could temper this and calls for additional research and management on these issues. Several broad areas of future intervention are described, which summarize points made earlier. A key observation in their assessment is that most of the necessary STI and policy decisions represent collective choices, and thus we have the power to determine our own future.

In conclusion, the authors of these books are to be congratulated on producing a broad-based well-integrated and readable account of the multiple roles of agriculture and the resources on which it depends in the provision of nutritious foods and the maintenance of public health and wellbeing throughout the Americas. To paraphrase the authors, the overall challenge with future agriculture in the Americas will be for it to continue to sustainably add livelihood opportunities, but also be better employed to address the food and nutrition security needs of all its people.