he presents information and a few opinions on modern agriculture, biodiversity, proprietary interests, and crop improvement. Obviously I liked the book. All crop scientists, but most particularly those involved in crop improvement, will learn from it and enjoy it. It does us good to think about where our crops, germplasm, and agricultural systems come from. I have only two disappointments. First, Harlan makes an appeal for the maintenance of wild populations, indigenous landraces, and the cultural and social systems associated with these, so as to preserve biodiversity and to promote its continued development as these landraces and populations co-evolve with pests and suffer the vicissitudes of other environmental stresses. However, I wonder if he should not have made this appeal stronger and louder. In Chapter 9, he spends more time discussing genetic proprietary issues than biodiversity. Second, Harlan does not spend much time discussing the future of his discipline. What unresolved issues should current and future scholars of agricultural origins and plant domestication address? What approaches might they take? However, despite these reservations, I recommend this book and firmly believe it is destined to join Professor Harlan’s Crops and Man as a “must read classic” in the agronomic literature.

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Feeding the Ten Billion: Plants and Population Growth, by Lloyd Evans, is a compendium and analysis of humanity’s struggles to feed itself since the dawn of civilization, and before. Evans masterfully and clearly summarizes the history of agricultural production and its interactions with population increase, from the hunting and gathering days of Homo sapiens up to the present time. He wrestles with the consequences of the never-ending interactions between population and agriculture. Did increases in food production stimulate growth in population or did growth in population force farmers to invent new ways to increase food production? How can we feed the ten billion to come in just a few decades, when we can’t equally feed our present six billion? How can we increase crop yields per unit area when present high yield methods are already criticized as environmentally destructive? How can we increase food production per person in the developing countries knowing that they already are under-endowed with arable land and economic resources but over-endowed with mouths to feed? Will the prospect of global warming further intensify a feared shortage of food production capacity, and if so, in which parts of the world?

In successive chapters of his book, Evans reviews the history and development of food production techniques—the development of agriculture. He focuses his investigation on food crops. Chapter headings such as, “Towards the first billion (1500–1825)”, “The third billion (1927–1960)”, and “The sixth billion (1986–1998/9)”, compartmentalize the development story and also point out the fantastically increasing pace of population increase. His review culminates with discussion of the application of science to agriculture, with special attention to its utility in increasing yields in the near future. Some of his conclusions are: (i) The world now depends absolutely on continuing increases in yield per unit area to provide food for an increasing population. Little or no more fertile land can be brought into cultivation anywhere in the world. (ii) Development of agricultural science in Europe in the 18th and 19th centuries resulted in dramatic increases in crop yields and helped bring Europe out of poverty and food shortages that were not very different from those now seen in many parts of the developing world. He asks, can science do the same for the developing world today, or are conditions so different that the European experience does not apply? (iii) Throughout the history of agriculture “farmers have had to weigh the requirements for food production against those for the long-term sustainability of agriculture and the environment”. They have not always made the right decisions, in the past or in the present. (iv) Regional climate changes have caused disastrous drops in food production capacity in the past and they will do so in the future as well, but we now expect—and fear—global climate change. (v) We face the prospect of global absolute limitations on amounts of water and land that can be used for agricultural food production. We can no longer dam more rivers or plow more land. (vi) Genetic yield potentials of the major crops may be approaching their limits, although it is true that breeders and agronomists are still able to help farmers to increase yields in most parts of the world. Crop yields on the farm are still well below their theoretical maximum potentials. This margin, from current to potential yields, is our one hope for increasing global food production to meet future food needs.

Evans says, therefore, that research designed to find ways to increase yields in sustainable fashion is needed now more than ever before. But paradoxically, funding for such research is declining. He speculates that current preoccupation with environmental health and social equity has deflected interest (and funds) from research on the one element—yield gain—that must underpin all efforts to improve environmental health and social equity.

Evans is a plant physiologist and he treats the problem of food production from the point of view of one who knows the limitations and potencies of crop plants per se. But his grasp is much broader than his scientific specialty. He considers the impacts of economics, geography, sociology, geology, climatology, and genetics on food production over time.

This book will be excellent background reading for anyone with concern for global population and food supplies, agricultural development potentials, environmental consequences of agricultural production, or socioeconomic interactions with agriculture. It can be read and understood by the non-specialist, but its rigor will satisfy the specialist. Its unique value is its historical perspective of humanity’s efforts to feed itself. Evans points out that in many cases we are merely repeating the past, despite our belief that we have discovered something new. But he also says that in some cases we are facing unprecedented and in a sense final challenges, primarily as we reach the global limits of land and water for food production, and the prospect of rapid and uncertain global climate change.

Evans makes no firm predictions about the future but does say that, “raising of crop yields to match further population growth without compromising the ability of future generations to meet their own needs will require all the understanding, inventiveness, and interaction of farmers, industrialists, agricultural scientists, educators, environmentalists, health care workers, and policy makers that we have, and which have been sampled in this book. Feeding the ten billion can be done, but to do so sustainably in the face of climatic change, equitably in the face of social and regional