February 18, 2014

Humanity's Gamble

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Humanity today complacently assumes that the world agricultural system can continue to feed the huge and growing human population indefinitely without revolutionary changes in strategy and behavior. The world community is taking a gigantic gamble that even today's inadequate level of nourishment can be maintained for as many as 9.7 billion people, a third more than exist today, in 2050, a mere 36 years from now.

Among many unexamined assumptions, the gamble includes betting that climate disruption will *not* prevent continuing increases in the yields of major grains and soybeans nor cause more and more widespread crop failures through extreme weather. It includes betting that climate disruption, leading to migrations and depletion of fish species, combined with ocean acidification, will *not* reduce fisheries productivity. In the face of climate disruption, as precipitation patterns change and glaciers melt, we are betting that water will continue to be readily available for farming, especially critical access to water for irrigation, and that changes in infrastructure and other measures will be sufficient to prevent further deterioration of water security.

It is betting that the food system, heavily dependent on oil and itself producer of roughly a quarter of global greenhouse gas emissions, can make a substantial start on kicking both habits. It is betting that the constant need for more food will not prevent nations from undertaking a serious commitment towards global atmospheric decarbonization. It is betting that the energy-intensive and highly polluting Haber-Bosch process can continue to keep nitrogen levels in agricultural systems adequate and that the geopolitical problems surrounding the world's available supplies of phosphorous for fertilizer, especially battles over Western Sahara, will be solved,[1] even while reducing the deleterious effects of overfertilization runoff on ocean and freshwater productivity. It is

[1] http://bit.ly/1aYa3yt

betting that expanding reliance on such macronutrient fertilizers can replace sound soil husbandry over the long term.

In addition, humanity is betting that integrated pest management (IPM) can safely and effectively replace both the pest-control service of winter in midlatitudes as the global average temperature rises, and as the pest-control services of birds, bats, and predacious insects falter as their populations decline in the great sixth extinction episode now well under way. It is also betting that, especially for the variety and nutritional *quality* of food, natural pollination services will be maintained despite the biodiversity crisis. It is betting that the 'genetic insurance' provided by the wild relatives and indigenous cultivars of food crops will not be lost or eliminated from the countryside and remaining wildlands by the drivers of global environmental change operating in synergy. It is betting that the growing demand for meat in emerging economies, and for biofuels, will not reduce the access of the poor to grains. And perhaps most important, it is betting that people will have the income to purchase what food is available.

At the moment, this looks like a *very* bad series of bets, especially since close to a billion people are already hungry and more than that are malnourished. Nonetheless, these are far from the last of the bets. Perhaps the biggest unquestioned assumption is that the trajectory of the global population will follow the medium projection of the United Nations' demographers and that little or nothing can or should be done to change it. This bet includes assumptions that death rates will continue to fall as they have done for more than a century and that birthrates in developing nations will gently decline as in recent decades, while those in developed nations may rise significantly. The continued expansion of the population is on a collision course with the tightening constraints of the agricultural system, as well as of other essential resources.

Losing any of the bets about future food supplies could easily result in thousands to hundreds of millions of additional deaths and enormous hardship; losing several bets could produce some combination of mass starvation, pandemics, and warfare (possibly nuclear), leading to a general breakdown of civilization.

Can the odds of losing these misguided bets and of avoiding a collapse be changed? What would be required to do so? We will explore some possibilities for brightening the future outlook in our next blog.

MAHB-UTS Blogs are a joint venture between the University of Technology Sydney and the Millennium Alliance for Humanity and the Biosphere. Questions should be directed to joan@mahbonline.org

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