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Diversification into Horticulture and Poverty Reduction: A Research Agenda

KATINKA WEINBERGER and THOMAS A. LUMPKIN *
The World Vegetable Center, Shanhua, Taiwan

Summary. — Horticultural produce and processed products from the developing world are becoming increasingly popular both in domestic and in international markets. Global production and exports are rising steadily. However, yield increases have been smaller than area growth and have been negligible or even negative in the least developed countries. While experience shows that horticulture can offer good opportunities for poverty reduction because it increases income and generates employment, care must be taken that small and poor farmers are not excluded from the opportunities in these market sectors. In this article, we argue that development agencies must put more emphasis on horticultural research and development, especially in the following priority areas: genetic improvement, safe production systems, commercial seed production, postharvest facilities, and the urban/peri-urban environment.

Key words — horticulture, global trends, poverty reduction, research needs

1. INTRODUCTION

Horticultural produce, defined here to include fruit and vegetables, but not flowers, and processed products are facing increasing domestic and international demand. Widening market access and liberalization increasingly allows rural people to escape poverty through production and exchange of non-staple crops. Horticultural production can be highly profitable, increase employment opportunities, and bring about increasing commercialization of the rural sector. Horticulture thus has a role to play in a world where 1.1 billion people continue to live in extreme poverty on less than US$1 a day and another 1.6 billion who live on between one and two dollars per day. The first Millennium Development Goal, to eradicate extreme poverty and hunger in particular depends on raising the productivity of agriculture (von Braun, Swaminathan, & Rosegrant, 2004). However, we argue that the research agenda for agriculture must be broadened from cereal crops and must put more emphasis on horticulture. Horticulture research must receive more attention from policymakers and donors alike.

Historically, the attention of development policymakers is and has been focused on staple grains, especially rice and wheat. Since the "Green Revolution" was initiated in the 1950s, vastly more resources have been channeled into the development and improvement of food grains than into horticultural research. Recently, the Consultative Group on International Agricultural Research (CGIAR) has expressed more interest in horticulture and research on high value crops has been identified as a system priority (CGIAR, 2004). Still, investment into horticultural research remains woefully inadequate. In 2002, the CGIAR system invested US$118 million on research for cereals, 37% of all CGIAR expenditures (CGIAR, 2002). In contrast, during that same year CIAT, [1] INIBAP, and AVRDC together invested US$15.7 million for fruit and vegetable research (AVRDC, 2003; CIAT, 2003; INIBAP, 2002), roughly 13% of what was invested into cereal crops.

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These research investments do not adequately represent the value of horticultural crops. The world's five largest producers of rice, wheat, and maize are China, United States, India, Indonesia, and Brazil. Even in these five large cereal producing countries, the value of fruit and vegetable production as compared to all cereal production is 85%, 105%, 55%, 59%, and 91%, respectively. [2] On a global level, the value of all fruit and vegetables traded is more than double the value of all cereals traded (FAO, 2005).

Despite this neglect, we argue in this article that a silent horticultural revolution is taking place. Albeit from a much smaller base, average annual production growth in horticultural crops has been larger than in cereal crops. All over the world, the area under food grains is under pressure from more profitable horticultural crops. The increases in total volumes of fruit and vegetables traded worldwide have been dramatic. But while trend lines are impressive, the magnitudes are inadequate to supply minimally nutritious consumption and to have a major impact on poverty alleviation in the developing world. Much more political and financial attention must be given to research in horticultural systems, if a significant portion of poor farmers are to benefit from the potential of this silent revolution.

2. GLOBAL TRENDS IN FRUIT AND VEGETABLE PRODUCTION AND TRADE

(a) *Production patterns*

Global fruit and vegetable production has increased to 1.34 billion MT in 2003, up from 396 million MT in 1961 (FAO, 2005). Largest producers of fruit are the developing countries in Asia (without China) followed by developed countries. For vegetables, the largest producer is China, followed by India. Both for fruit and vegetables, absolute growth in production during 1961–2003 was the largest in China where fruit production grew with an average annual growth rate of 8.3% and vegetable production grew with an average annual growth rate of 5.6%, and other developing countries in Asia where fruit production grew with an average annual growth rate of 3.3% and vegetable production grew with an average annual growth rate of 3.5% (Figure 1).

In 2003, the global production of fruit and vegetables was 212 kg per capita: that is, 135 kg of vegetables and 78 kg of fruit. Per capita production of fruit and vegetables is unevenly distributed. Total fruit production is the highest in Latin America and the Caribbean at around 183 kg per capita. Total vegetable

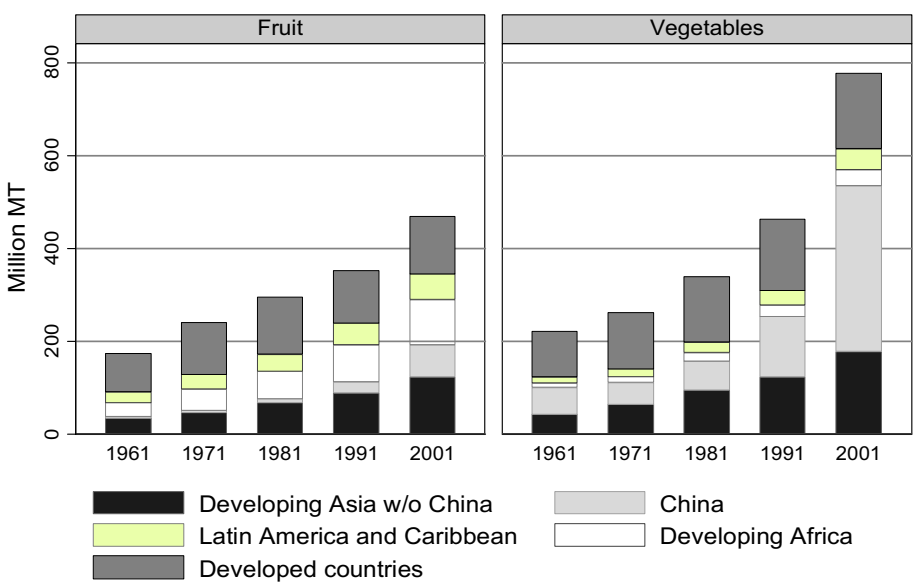

Figure 1. *Global production of fruit and vegetables.*