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Agriculture and food policies can promote better health and mitigate the burden of chronic non-communicable diseases in the Americas

Enrique Jacoby^a and Corinna Hawkes^b

^a *Pan American Health Organization*

^b *Freelance Consultant, and Visiting Research Fellow, Centre for Food Policy, City University, London*

1. INTRODUCTION

The greatest challenge to health in the Region is the premature death and physical and mental disability resulting diseases as obesity, diabetes, cardiovascular disease, certain types of cancer, and osteoporosis. Most of those diseases are aptly labeled now Diet-related Chronic Diseases (DCD) as they are associated to lack of physical activity and poor diets, including the consumption of foods high in calories, saturated fat, salt and low in nutrients vital to health, as minerals, vitamins and several bio-active compounds (e.g. resveratrol, lutein, lycopene etc.) that abound in vegetables, fruits and unrefined grains.

The rapid rise of obesity rates among adults and youth, which increases two to three-fold the risk of developing DCDs, is a good measures of the seriousness of the new epidemics. About 50 to 60% of adults are overweight and obese in Latin America and the Caribbean and the problem is also reaching younger generations. In several countries overweight kids and adolescents represent 20 to 25% of those groups.

DCD and non-intentional injuries represent nearly 70% of all causes of death in the Region of the Americas, mostly affecting those 18-70 years old group, in middle and low-income countries in Latin America and the Caribbean. The Disability-Adjusted Life Years (DALYs)^a lost because of DCDs amount to 12.5 million DALYs adding to the 4.6 million DALYs lost to childhood and maternal under nutrition.¹ The direct medical costs associated are staggering, though they are only part of total costs related to DCDs. For instance, the estimated total direct medical costs of treating Diabetes Mellitus (DM) totaled US\$10,720 million in 2000, while indirect costs, including productivity losses, totaled US\$54,495 million.²

On the other hand, historic health indicators as infant mortality and undernutrition have declined significantly in the region although still remain important problems. Forty percent of children still suffer from iron deficiency anemia, 20% (with a range of 1%-45%) from growth retardation, and 5%

^a *One DALY equals the loss of one healthy year of life. This figure excludes the U.S. and Canada.*

from moderate vitamin A deficiency. Poor environmental health conditions and a monotonous grain- or tuber-based diet low in meats, fruits, and vegetables, are probably the main culprits.

2. THE DIET TRANSITION AND ITS DRIVERS

The diet transition

Many factors have contributed to the rise of DCDs. A major cause is the so-called “diet-transition”, characterized by increased consumption of high-calorie foods, such as meat and vegetable oils, more highly-processed foods, such as snacks, fewer staple foods, such as maize/white corn and beans, and inadequate quantities of fruits and vegetables.

Those trends are counter to the dietary recommendations arising from the most comprehensive review of the available scientific information, the WHO Technical Report, Diet Nutrition and the Prevention of Chronic Diseases.³ The Report recommends that populations above 5 years of age should:

- Moderate total energy consumption striving towards a healthy weight;
- Limit the consumption of saturated fats and favor poli- and mono-unsaturated ones. Make efforts to eliminate trans-fats from individual’s diet and ideally from the country’s food-supply;
- Increase consumption of a variety of plant sources, including: fruits, vegetables, whole grains, legumes and a variety of nuts;
- Limit the intake of processed foods high in sugar, fat and salt;
- Consume alcohol in moderation.

3. DRIVERS OF THE DIET TRANSITION

Changing consumer food preferences is one driver of the diet transition, but not the only one. In fact, powerful market forces also play a role. Among them, the commoditization of the agriculture in particular cereals and some grains - supported by governmental subsidies -, the subsequent lower production costs of processed foods; and innovations in food technology and distribution systems. No less important are the now widely recognized negative impact of intense marketing of highly palatable processed foods; the growing salaries in cities, and real or perceived time constraints of modern life that contribute to the weakening and in some cases abandonment of sharing meals with the family and social connectedness it provides.⁴

Information, education and advertising can certainly shape public demand. Unfortunately, public health information on diet and nutrition is still limited in LAC, reaching only small groups; whereas, commercial advertising turns out to be the main “educational” mechanism, leading to real and potential negative consequences on diet and health. This is the case of children to whom large food marketing efforts are being directed.⁵

A connection has also been observed between obesity and poverty, most likely as a result of the readily available, highly palatable and low-cost processed foods that are high in sugar and laden with fat. That coupled with intense and highly specialized marketing and advertising efforts, has contributed to the mass-culture of pre-packaged foods, soft drinks and eating out, common in most cities today.

Why are these factors important? Because they all affect what people eat in Latin America and, therefore, their risk of DCDs. Major changes will be needed in several dimensions to reach the WHO

recommended consumption of 400-600 grams of fruits and vegetables per person a day, increase diet quality and reduce their risk of DCDs. Eating well is not the business of few nutritionist and doctors; environmental interventions involving a range of stakeholders are needed to reverse these trends. These interventions will require intersectoral participation and strong leadership from the Ministries of Health (MOH) and close collaboration with MOA (Agriculture) and trade experts.^{6,7}

Reversing current practices in agriculture, food production and marketing will require that we start a new trend, a new food and dietary trend that embraces above all, quality over quantity. This is central to eating healthy and the prevention of not only DCDs but also stunting growth and several other nutrition deficiencies.

This paper focuses on the role of agricultural production and policies in dietary choices, and identifies how they could be levered to shift the food paradigm from quantity to quality. It also examines this question in light of the current food price crisis in Latin America and the rest of the world.

4. AGRICULTURAL CONDITIONS AND POLICIES THAT INFLUENCE FOOD SUPPLIES AND DIET IN THE AMERICAS

Agricultural production, trade and food consumption

An overview of food availability and nutrition in the Americas over the past 20 years shows a generally improving nutritional situation combined with a more trade-oriented food supply. The trends of food commodities associated to DCD risk are mentioned here. Among them, livestock and dairy products, as well as oil, sugar, fruits and vegetables and the major inputs to production of those commodities.^{1,b}

As previously noted by Nugent⁸, the LAC sub-region has experienced an important increase in livestock and dairy products consumption which will continue in the future. Grain production has increased by 20 percent in the past ten years in LAC and three-quarters of the increase is destined for animal feed use. Across the Americas, growth in grain production supports recent increases in chicken exports and continued growth in domestic chicken demand. Oil and fat consumption since 1995 has risen at a fast pace in Latin America and Mexico and a slower pace in the U.S. and Canada due to saturation of the market. Latin America on average reflects a high per capita consumption of fats and oils (20 kg per capita in some countries) in comparison with other developing country regions (11.3 kg per person overall,) but is still lower than the developed country average of 29 kg per capita. Consumption of fish and fruits and vegetables has declined or grown very little in the past 20 years in much of the Americas region at least in part due to relative price increases for those foods.^{7,9}

The Americas is an agricultural exporter region, being the U.S. and Canada globally dominant cereal and livestock exporters. The LAC sub-region's overall agricultural trade balance reflects that of Argentina and Brazil, which account for about half of the region's total agricultural exports, but less than one-quarter of its total imports. Cereals are the main imported commodity and are used largely to feed livestock. On the other hand, the Caribbean sub-region remains an agricultural importer since the 1990s.

Most important exports from the region are sugar, coffee, bananas and soy. Beef and sugar exports have declined reflecting a growing regional demand. In sum, the Americas are export-oriented in agriculture, but also include many countries that are large importers of food. These patterns reflect existing market forces, but may not be well aligned with current recommendations for healthy eating patterns.

^b The agriculture system consists of a complex set of interlocking relationships of demand and supply for inputs, complementary and substitute goods that cannot be fully described for purposes of this paper. Useful references include FAO 2003 and periodicals, World Bank.

5. AGRICULTURAL POLICIES IN LATIN AMERICA

Patterns of agricultural production and trade in Latin America are the direct result of policy choices which emphasized high yields, increasing production and exports. In the 1970s, policies in the Americas supported agricultural research, technological development and commercialization. This was the era of the “Green Revolution” – public investment in high-yielding crop breeds and intensive farming methods, and government subsidies for inputs such as irrigation, fertilizers and high yielding seed varieties. In Mexico, where the Green Revolution commenced, dwarf wheat varieties introduced in the 1950s led to a threefold increase in yield by the 1970s¹⁰. Subsidies and new technology helped increase irrigation by 71% during the same time period, and fertilizer use increased by more than 20-fold. Further forms of state intervention such as government procurement of agricultural outputs by state marketing boards aimed to stabilize prices while quotas and tariffs aimed to protect domestic markets.¹¹

Yet, at the same time, policies in many Latin American countries tended to “discriminate” against agricultural producers (often termed a “tax” on agriculture).¹² Low food price policies, income and land taxes on agricultural producers, and export taxes on food, aimed to use the food and income produced by agriculture to stimulate industrial growth in the cities. Agriculture was seen primarily as fuel for industrial growth rather than as a source of growth in itself. There was, however, variation between countries: whereas Argentina and Ecuador taxed agriculture, Brazil and Chile protected it.¹³

In the 1990s there was an important paradigm shift in agricultural policy in the Americas. In line with the process of globalization, countries shifted their policies to a more market-led approach. As a region, most Latin American countries embarked on internal market reforms and trade liberalization, typically eliminating state food marketing boards, reducing tariffs, and eliminating quotas and export taxes. The pace of change speeded up in the mid-1990s following the Agreement on Agriculture (1994), an international agreement forged through the General Agreement on Tariffs and Trade (GATT), which pledged countries to reduce tariffs, export subsidies and domestic agricultural support. The foundation of the World Trade Organization (WTO) in 1995 then provided a new negotiation mechanism for countries to open up their markets to more imports and increase exports, as well as introducing requirements for domestic liberalization of agricultural policies.

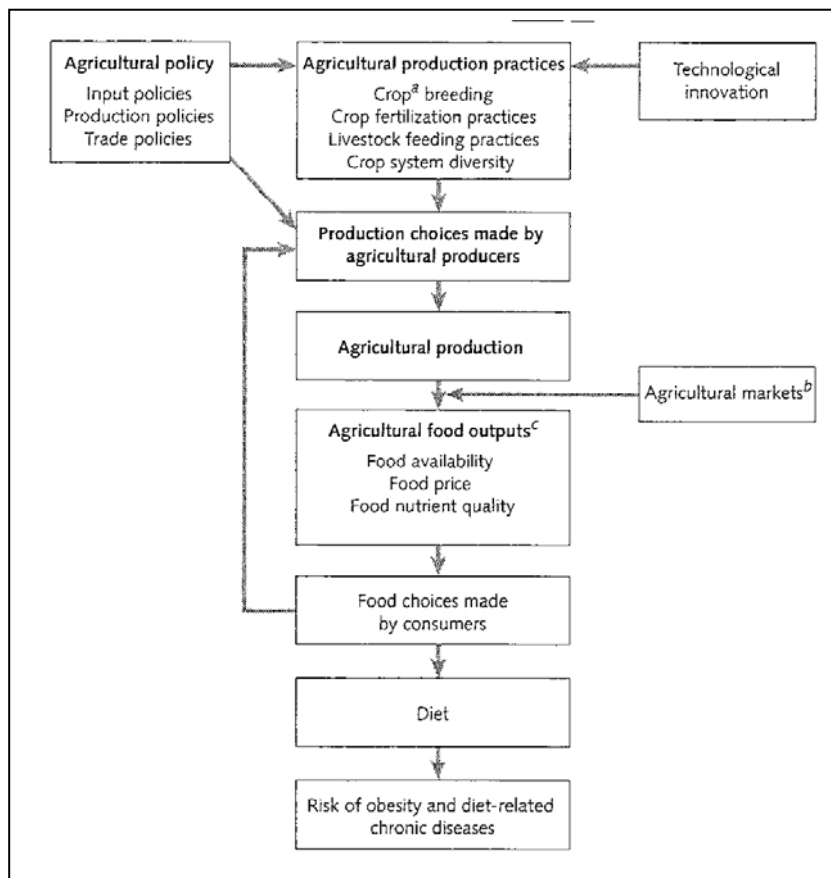
6. DIETARY IMPACT OF AGRICULTURAL POLICIES

Figure 1 conceptualizes how agricultural policies have the potential to affect diet and diet-related health risks. The critical link is through food availability and prices, with agricultural production practices also having an important impact on food nutrient quality. Agricultural policies with the potential to affect diet can be categorized into three: input policies, production policies, and trade policies.¹⁴ All these policies affect the choices made by farmers about what agricultural production practices to adopt, and what crops to grow. For example, public investment in the development of high-yielding crop varieties (an input policy) creates an incentive for farmers to produce that crop over another. Price support mechanisms have the same effect, as do export incentives. These choices by farmers then affect what foods are produced in what quantity and quality, thus affecting the availability, prices and nutrient quality of these foods. This in turn affects the food choices made by consumers, and, therefore, their diets and diet-related health risks. What is important here is that different foods are affected by different policies. So, for example, if livestock and oilseeds are subject to different policies than, say, fruits and vegetables, the effects on availability, prices and nutrient quality will be different. Critical here, then, is the relative difference between foods: agricultural policies affect the availability, prices and nutrient quality of some foods differently relative to others.

Two examples that illustrate the potential of agricultural policies to affect agricultural and food consumption choices in the Americas are oilseeds and meat. Take the case of soybean oil production in Brazil. In the 1970s, public funding for soybean breeding, guaranteed minimum price supports, production and marketing credit programs, agricultural subsidies, public infrastructure programs and supportive energy and taxation policies were all used to promote production.¹⁵ These changes stimulated huge increases in the production of soybean oil, often on large farms producing under economies of scale.

As a result, calorie availability from soybean oil per capita grew by 10 times, from 25.9 to 247.3 kcal per capita per day. Actual food consumption statistics from that time suggest a substitution of animal fats (lard, bacon, butter) by vegetable oils and margarines. Owing to the replacement of animal fats by vegetable oils, the effects of these changes on population health were in many ways positive, but there was nevertheless a huge increase in the total lipid content of the diet in the southeast of the country, to close to 30% of dietary calories by 1988 (the maximum level recommended by the WHO).¹⁶ Production stabilized somewhat in the 1980s, but was then further stimulated by a series of market-led reforms in the early 1990s, which opened up the soybean oil market and further encouraged production for export. While this did not have the effect of stimulating domestic consumption, it enabled greater consumption in the importing countries, such as China and India.¹⁷

Figure 1. The relationship between agricultural policies and production practices and diet



a. "Crop" refers to all food crops, livestock, and fish

b. The functioning of agricultural markets is not explored here but also has dietary implications

c. Food availability refers to the relative amount and diversity of different types of food available; food price refers to the cost of these foods; and food nutrient quality refers to the nutrient content and density of foods

Source¹⁸

Agricultural policies also played a role in the extraordinary increase in chicken consumption in the region. Since the 1980s, chicken production and consumption have grown at the expense of beef in the majority of Latin America. Chicken production now almost exceeds that of beef. In just 14 years (1990–2004), chicken production more than doubled on average, whereas beef production increased by around 20%. Consumption followed the same trend. While this shift reflects increasing consumer preference for chicken, it also reflects changes in policy and technology. Take the case of Colombia. Domestic production in the country started to grow in the 1980s as a result of public and private investment in infrastructure and technologies. Then, in the 1990s, a market-liberalization program (the “apertura”) enabled the import of low cost chicken feed in the form of maize/yellow corn from the United States. As a result, yellow corn for animal feed flooded in at very low prices, sharply lowering production costs, promoting growth in output, and lowering prices relative to beef. Mexico is another case in point. In Mexico, the market for animal feed opened up through North American Free Trade Agreement (NAFTA), which replaced import licensing of corn with a tariff-rate quota (with no over-quota tariff applied), and eliminated tariffs on soybean meal (as of 2003).¹⁹ As a result, U.S. exports to Mexico of feed grains, oilseeds, and related products more than doubled during the NAFTA period, approaching 17.5 million metric tons in 2005.²⁰ Imports now account for about half of the feedstuffs used in the Mexican poultry industry. According to analysis by the USDA, “U.S. feedstuffs enable Mexican livestock producers to expand output, lower their costs of production, and compete more effectively with meat imports from the United States, Canada, and other countries. (p.17)

7. REORIENTING AGRICULTURAL PRODUCTION AND POLICIES TOWARDS QUALITY

Action can be taken in several domains to reorient agricultural production and policies towards quality over quantity. On the policy side, important changes could be made to promote consumption of fruits and vegetables. One strategy would be to develop a new policy environment focused on production for domestic markets alongside exports. History tells us that public and private investment in fruit and vegetable production, accompanied by a supportive policy environment, led to a massive growth of fruit and vegetable production. But in Latin America, this has been export-focused. Chile, for example, is the leading fruit exporter in the southern hemisphere, most notably of grapes. This is the direct result of policy decisions.²¹ In the 1970s, the government deregulated agricultural policy, privatized land ownership, provided more favorable conditions for foreign investment and liberalized trade. These policies were strengthened in the mid-1980s, with the provision of tax incentives to boost exports, increased investment in export-oriented agriculture and more provision to increase foreign investment. The result was an explosion of exports and increased consumption of Chilean fruit outside of the country, particularly in the United States. While availability of fruit did increase in Chile during this period, it has been declining since the 1990s. Thus it could be argued that if a similar intensity of political and financial investment (though not necessarily implementing the same policies) was made in agricultural production of fruit with the aim of increasing domestic consumption, the effects would be palpable. This would also have to involve significant investment in developing marketing channels.

Another, more targeted strategy would be to support programs that link horticultural producers direct to markets, such as schools, or vendors operating in low income urban communities. This more targeted approach may be more effective because it focuses on under-consuming populations and provides a measurable agri-nutrition intervention. Policies are needed to create incentives for farmers to participate in such programs. One existing example is the Family Farming Food Acquisition Programme, which has been implemented in Brazil as part of the Zero Hunger Program. In the program,

the government purchases food produced by family farms. The program ensures food supplies for poor families, school meals and public hospitals while creating a market for the small farming sector. It has been reported that the program has had a particularly significant impact in northeastern Brazil, the country's poorest region.

Changes could also be made on the production side to improve quality. Crop breeding programs are now beginning to focus on increasing nutrient quality. Raising the content of bioavailable micronutrients in staple crops ("biofortification") is currently being developed as a strategy to increase micronutrient intake. These research efforts are now taking place in Latin American countries (Mexico, Peru, Brazil). Crop fertilization practices can also be used to improve food nutrient quality. The use of fertilizers containing selenium, iodine and zinc, for example, can make up for depletion of these minerals in soils and be passed into the foods and then the people who eat them. Livestock feeding practices likewise affect meat quality. The development of intensive cattle production in Latin America on feedlots is a negative development in this regard, because grain-fed meat has a poorer fatty acid profile relative to grassfed meat. Policies should ensure that support remains for traditional grassfed beef throughout the Americas. Moreover, some evidence from Mexico indicates that livestock feeding practices can be used to raise meat with healthier fat profiles.²² In a rural community-based project, backyard pigs were fed with surplus avocados, which produced meat with a low fat content. This "low-fat pork" was raised and marketed at a premium to a rapidly growing segment of the market willing to pay for healthier foods, thus increasing the income of the local communities.

Another consideration is the degree of biodiversity in cropping systems. Lack of food diversity inhibits access to a healthy diet. While diversity has increased significantly in all regions of the world, climate and geography still present formidable obstacles to dietary choice, especially for those in rural areas. Most countries have large urban/rural differences in food availability, especially of fresh foods, and in diversity of food supplies. Rural dwellers are more reliant on subsistence and locally-produced foods, which may not provide a balanced diet. Food distribution systems may be spotty due to inadequate infrastructure that limits refrigeration, slows transportation, and otherwise increase costs of distribution to rural areas, thereby limiting food availability. Urban dwellers encounter far more choice of food varieties, but still face obstacles of access (if they live in poor, underserved areas of cities or informal settlements) and affordability.

Some of these problems could be ameliorated by policies that promote biodiverse cropping systems. Biodiverse food systems are typically rich in indigenous and gathered foods high in essential and nonessential micronutrients.²³ It is thus increasingly being suggested that growing the diversity of crops needed to supply a sufficient range of micronutrients in one cropping system has strong potential to promote dietary quality.²⁴

8. RISING FOOD PRICES: AN OPPORTUNITY FOR CHANGE?

Many Latin American leaders have expressed serious concern about the rising food prices in the region. According to the Economic Commission for Latin America (ECLAC), relatively high prices are expected for the next 15-20 years, a shift which could see 10 million more people living in poverty.²⁵ These price rises have reversed the trend towards lower prices for oilseeds and maize/corn, which in some cases are now 100% more expensive. An analysis conducted by the World Food Programme on how food prices have affected the populations in rural communities revealed that people today purchase 50% less food than they did 18 months ago with the same amount of money. This means their nutritional intake, on an already poor diet, could be cut by half.²⁶

But just as the Americas underwent an important paradigm shift in agricultural policy in the 1990s, does the current food price crisis now provide the opportunity for another paradigm shift? A shift that would reorient the agricultural sector away from quantity and towards quality? For although food quantity is the major concern, it is clear that the quantity focus over the past several decades has not prevented the crisis. Perhaps a shift towards quality would be a more sustainable approach for the agricultural and public health sectors?

There are two notable opportunities for change. The first is the rising cost of oilseeds and animal feed. If the prices of vegetable oils and meat go up as a result, this presents an opportunity to ensure that the prices of fruits and vegetables stay low, thus encouraging people to shift their consumption to fruits and vegetables. This is urgently needed to encourage greater fruit and vegetable consumption. Latin America is one of the lowest fruit and vegetable consumers in the world.²⁷ During the last 30 years, the share of energy available from fruits and vegetables in the region, as a proportion of the total energy per capita available, has remained in the range $\pm 1\%$ for vegetables, and decreased 9% for fruits. In Brazil, for example, the relative participation of fruits and natural fruit juices in total calorie consumption was just 2.4% in 2002/03, relative to 2.7% in 1987/88. In 2003, only 30% of Brazilian adults consumed fruit daily.^{28,29} Likewise, in Mexico, fruit consumption has scarcely changed since 1989. The limited data available also suggests that lower income groups consume disproportionately low amounts of fruits and vegetables, and are the most likely group to be affected by price rises. In Brazil, the highest income group class consumes 3.4% of their calories from fruits, relative to 0.6% for the lowest, and consumption is significantly lower in households with less education and fewer assets, particularly in rural areas. In Mexico, the amount of fruit consumed by the top quintile is at least twice the amount consumed in the bottom quintile. This is the right time then, to invest in fruit and vegetable production to encourage a shift in relative prices that will encourage lower income groups to consume more fruits and vegetables.

The second opportunity is to implement policies to stimulate food production among the smallest producers. Price rises have some potential to actually benefit family farms if they receive higher prices for their products. But these benefits are reportedly not reaching such farmers sufficiently given high input and marketing costs. Policies are thus needed to ensure that higher prices now being paid for agricultural crops benefit small farmers. Investments should be made and policies implemented to support further agricultural development among small farms, focusing on sustainable, diverse cropping systems, providing access to markets – and high quality, healthy food. It is an opportunity to develop innovative marketing arrangements, such as food acquisition from small farmers, to ensure that vulnerable populations have access to minimally-processed, healthy food, and local farmers have greater food market share.

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