

Sustainability of agricultures and globalization¹

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During the second half of the 20th century, the world's population multiplied by 2.4, i.e. it increased from 2.5 billion persons in 1950 to 6 billion in 2000. During the same time, agricultural and food production multiplied by 2.6 (FAO, Faostat). Thus, the latter progressed a little more quickly than the population. Furthermore, the global agricultural output growth has been much higher during the last 50 years than during the 10,000 years of agricultural history.

While bypassing the most optimistic expectations, this gigantic progress has limits and drawbacks however : three quarters of the peasants in the world are still working with manual tools only (e.g. hoe, spade, digger stick, machette, harvester knife, sickle...). Meanwhile, one third of humanity suffers from serious food deficiencies, and farmers constitute the majority of the poor and of the undernourished of the planet.

What is more precisely the world food and agricultural situation ?

What are the causes and the consequences of that ?

Which prospects and which remedies can be envisaged ?

These are the questions treated in this presentation.

Food and agricultural deficiencies

Out of some 6.4 billion people on the planet nowadays, approximately 2 billion suffer from malnutrition due to lack of minerals (e.g. iron, iodine) or vitamins (e.g. A, C). Furthermore, 840 million, of which 800 million in developing countries, 30 million in former communist countries and 10 million in developed countries, suffer from undernourishment, in other words they go hungry almost every day (FAO, 2003).

According to FAO, about three quarters of the undernourished live in rural areas. The majority of them are farmers, very ill-equipped, badly located (living in difficult regions), with little land allotments, and poorly paid agricultural labourers. As for the other undernourished, the majority of them are former rural inhabitants who have been pushed to outmigrate towards ill-

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equipped and under-industrialized urban slums, where unemployment and low wages prevail, and where they have not found proper means of making a living yet.

However, despite the fact that rural-urban migration reaches approximately 50 million persons per year, the number of poor and undernourished in rural areas hardly decreases. That means that at least 40 million new poor and undernourished appear each year in rural areas of the world.

For 1.3 billion people who are economically active in agriculture in the world, on counts 28 million tractors only (FAO, Faostat), and 250 millions draught animals, that is around 2 percent and 19 percent respectively of the active agricultural population. This means that the extensive motorization and mechanization, that characterize the contemporary agricultural revolution, have only benefited a tiny minority of the world's farmers. Among these, the best equipped and best located can obtain 2000 tons of grains, or grains-equivalent², per worker and per year.

On the other hand, 800 to 900 million farmers regularly use the selected varieties spread with the green revolution, as well as the mineral fertilizers and pesticides which go along. Depending on their equipment, they can obtain between 10 and a few dozens tons of grains per worker and per year.

But, 400 to 500 million farmers remain, who have never been in a position to buy either a tractor, or a draught animal, or a cultivator, or selected seeds, or mineral fertilizers, or pesticides. These farmers obtain no more than 1 ton of grains-equivalent per worker and per year.

Moreover, in many former colonial or communist countries without significant recent land reform, most ill-equipped small farmers are largely deprived of land by the vast estates of several thousand or tens of thousand hectares i.e. the *latifundias*. As a consequence, these farmers are confined to micro-holdings of a few hundred square metres only – less than what they could cultivate, and well below the area needed to cover household food requirements. Therefore, these ill-equipped and quasi-landless peasants have to seek work on a day-to-day basis on the large estates, for wages ranging from 1/4 to 3 euros per day according to the country and the region.

Under such conditions, one can understand why, in almost all countries, farmers' average income is much lower than urban workers' average income, and even often lower than the wage of unskilled labour. One can also induce why poverty and hunger are particularly widespread among peasants. However, the mechanisms that led to such a situation remain to be cleared up.

² The grainss-equivalent is the quantity of grains having the same caloric value as the agricultural production considered.

Unequal development

At the beginning of the 20th century, the vast majority of world's farmers used exclusively hand tools. Their labour productivity did not exceed 1 ton of grains-equivalent per worker and per year.

Meanwhile, in industrialized countries, some farmers using new animal drawn machinery (mowing machines, reaping-binding-machines...) could crop around 10 hectares each, which resulted in a gross productivity of 10 tons of grains per worker and per year. So, at that time, the gross labour productivity gap between the weakest and the highest performing agriculture in the world was ranging between 1 and 10 (Mazoyer, Roudart, 2002).

But, during the second half of the 20th century, the contemporary agricultural revolution spread in developed countries and in certain limited sectors of developing countries.

In developed countries, an ever smaller number of family farms succeeded in stepping over all the stages of this revolution. As regards cereals production for instance, the power of tractors and hence the maximum area cropped by a worker have almost doubled every ten years, so that one worker can crop more than 200 hectares of cereals nowadays. In the same time, thanks to selected seeds, mineral fertilizers and pesticides, the output increased by more than 1 ton per hectare every ten years, and reaches almost 10 tons per hectare today. Thus, as we have seen, the maximum labour productivity today reaches approximately 2000 tons per worker and per year.

However, from the sixties on, those farmers in developing countries who could afford it, and when supported by public policies, embarked on the green revolution, a variant of the contemporary agricultural revolution that excludes large motorized and mechanized equipment.

Then, starting from the middle of the seventies, investors of different profiles (e.g. entrepreneurs and local landlords, large international holdings, food product manufacturers, wholesalers, investment funds...), benefiting from the experience acquired by farmers of the South and the North as regards the green revolution and the contemporary agricultural revolution, embarked on the rapid modernization of *latifundias* in several countries from Latin America (e.g. Argentina, Brazil, Mexico...), Africa (e.g. South Africa, Zimbabwe...) and Asia (e.g. Philippines, India...). Since the nineties, they have undertaken to modernize large statal or collective estates in countries of the former USSR and in Eastern Europe. In these modernized *latifundias*, the levels of equipment and of productivity quickly became comparable to those of the best performing North-American and Western-European farmers.

By contrast, in vast areas of Africa, Asia and Latin America, many farmers engaged in rainfed or poorly irrigated agriculture have never been in a position to acquire the means of production of the green revolution or of the contemporary agricultural revolution. Accordingly, they could never increase yield or productivity.

Thus, during the second half of the 20th century, the gross labour productivity gap between the weakest and the best performing farmers worldwide was multiplied by 200. Today it ranges from 1 to 2000 tons of grains-equivalent per worker and per year.

The downward trend of real agricultural prices

In those countries where the contemporary agricultural revolution progressed most, productivity gains in agriculture have been so high that they outrun those of other economic sectors. As a consequence, real agricultural prices (inflation taken off) have fallen sharply. Moreover, in some of these countries, agricultural production increased much more quickly than domestic consumption, so that the exportable surpluses strongly increased.

In some developing countries where the green revolution has developed, production growth has outrun that of population also. But, since global consumption has been limited by the very low wages of most of the population, some of these countries (e.g. Indonesia, Thailand, Vietnam) began to export rice at low prices, although undernourishment continued to prevail there.

Finally, in the recently modernized *latifundias* of the former colonized or communist countries, agricultural cost prices are even lower. Here, indeed, wages paid to agricultural labourers do not exceed a few tens of euros per month, while other costs (e.g. land rents, taxes...) are usually very low, and local currencies are often undervalued. As a consequence, these large estates produce at very competitive prices, i.e. 80 euros per ton of wheat, 140 euros per ton of soyabean ; 1 euro a kilo of red meat, 0,5 euro a kilo of white meat, 0,1 euro a kilo of milk. These prices are equal to almost half the average cost prices of North-American and Western-European family farms, and they are 5 to 6 times lower than the prices of the years 1950 in real terms. But, as these large estates are located in countries with very high rural and urban unemployment, with low wages and undernourishment, they seek to export on international markets.

On the other hand, because of (i) the very significant decrease in international transport costs during the last decades, (ii) the lowering of tariff and non-tariff barriers to international trade, always renewed stratas of small farmers in the developing countries have had to face the competition of food staples coming from international markets at ever-lower prices. As a consequence, they also have had to sell their output at ever-lower prices.

International markets of staple food commodities are supplied by surpluses of developed and developing countries. But they account for a modest proportion only of the world production and consumption, e.g. approximately 15% in the case of cereals. Thus, international markets are residual markets, where prices are particularly low, i.e. approximately equal to the cost prices of export-oriented *latifundias*. But, as we have said, these prices are much lower than the cost

prices of the very large majority of the world's farmers. By selling their output at these prices, even the majority of farmers in developed countries would obtain a zero or negative income. Thus, they could neither resist the competition of international markets nor stay in business for a long time. If they do, in fact, it is because they belong to high income countries concerned with their food self-sufficiency, and may be with their food power, which therefore devote public funds to support agricultural producers.

In addition to the low level of agricultural prices, there are ample fluctuations of these prices in countries where no price stabilization policy is implemented.

Consequences

In developed countries, the strong fall in real agricultural prices led to a strong fall in income for small- and medium-sized farms. When having become unprofitable, they were generally not taken over when their farmers retired. This is the process by which 90% of the farms existing at the beginning of the 20th century have disappeared.

In these countries, farmers' daughters and sons abandoning agriculture generally have found jobs in industries or services. But, for the tens of millions of poor farmers who were forced to rural-urban migration in developing countries, the situation was very different.

In these countries indeed, ill-equipped, badly located and poorly productive peasants confronted to declining real agricultural prices first experienced a decrease in their purchasing power. Most of them eventually found themselves in a position where they were unable to invest in more effective farm tools, and sometimes even to purchase selected seeds, mineral fertilizers and pesticides. That is to say their development was blocked. Then, the decline in prices going on, their cash income became no longer sufficient to both renew farm tools and buy a few vital consumer goods.

To better understand this mechanism of extreme impoverishment, let us consider the case of a Sudanese, or Andean, or Himalayan cereal farmer using manual tools only and producing, without mineral fertilizer or pesticide, 1 ton of grain net per year (without including seeds for the following year). Some 50 years ago, such a cereal farmer received the equivalent of 40 euros (at 2004 value) for 100 kg of grain ; he had to sell 200 kg to renew his hand tools, clothing, etc., and was left with 800 kg to feed, modestly, a family of four persons ; denying himself a little, he could even sell an extra 100 kg to buy a new and more effective farm tool. Some 20 years ago, he received no more than 20 euros (at 2004 value) for 100 kg, he then had to sell 400 kg to renew his hand tools and other essential goods, and he was left with 600 kg to feed, inadequately, four persons ; under such conditions, he had no possibility of buying a new and more efficient farm tool. Today, he receives 10 euros only for 100 kg of grain, which means that he would have to sell more than 800 kg to renew his equipment and other basic goods, leaving

him with 200 kg only to feed four persons, which is of course impossible. In fact, at this price, he can no longer fully renew his working tools, modest though these are, or satisfy his consumption needs and restore his working force. So, he is condemned to indebtedness, and then to migration to the under-equipped and under-industrialized urban slums, where unemployment and low wages prevail.

The downward trend and the instability of agricultural prices have other consequences. By excluding from production millions of small farmers each year, and by discouraging the activity of those who stay in business, they bound the agricultural output and increase the food deficit of poor countries. By stimulating rural-urban migration, they contribute to maintaining high unemployment rates and lowering wages in urban areas, as rural migrants are obliged to accept wages that are barely higher than incomes of small farmers marginalized by downward prices. In this regard, one may note that the hierarchy of the lowest wages in different parts of the world closely reflects that of small farmer incomes (World Bank, 1986). As a consequence, fiscal receipts in poor agricultural countries are low, too low for these countries to be able to modernize and attract foreign investments. Indebtedness and even overindebtedness follow which, in many cases, bring to a loss of government legitimacy, ungovernable situations and civil war.

Thus, it is not surprising that half of humanity, living in rural areas or urban slums, has only an absurdly low purchasing power : according to the United-Nations Development Programme, 2.8 billion people live with less than US\$ 2 a day, and 1.2 billion of them have less than US\$ 1 a day (UNDP, 1999). These very low incomes limit food consumption, and thus agricultural investment and production. One can hypothesize that this enormous inability to meet basic needs is limiting global consumption, and thus is also limiting global growth.

As a matter of fact, governments of developed countries and international organizations try to remedy farmer purchasing power contraction, by implementing policies supporting farmer income in developed countries, and promoting development, poverty and undernourishment reduction in developing countries. But, these policies are often contradictory, difficult to finance, to manage and to justify. Finally, they do not meet the problems.

Prospects

In 2050, our planet will count between 8 and 11 billion humans (United Nations, division of the population, 2001). To feed them properly, without undernourishment or nutrient deficiencies, the quantity of plant products meant for feeding humans and domestic animals must more than double around the world. This quantity must almost triple in developing countries, it must increase more than fivefold in Africa, and even more than tenfold in several countries in that continent (Collomb, 1999).

To obtain such an enormous increase in plant production, farming activity must be expanded and intensified in all regions of the world wherever sustainably possible.

In order to allow all farmers in the world to construct and cultivate sustainable ecosystems, capable of producing a maximum of good quality products without degrading the environment, it is absolutely necessary to put an end to the international agricultural prices war. It is necessary to break with the trade liberalization which tends to bring prices into line with the lowest offers from surplus exporters. It is above all necessary to guarantee sufficiently high and stable prices to farmers, in order for them to live from their work with dignity. To this end, it is necessary to create a much more equitable and much more effective organization for international agricultural trade than the one which is currently in place. A new organization that would be based upon the following principles :

- establish large regional common agricultural markets, by regrouping countries having similar levels of agricultural labour productivity (West Africa, Southern Asia, Western Europe, Eastern Europe, North Africa and the Middle East, North America, etc.) ;
- protect these regional markets against all imports of low-priced agricultural surpluses by variable customs duties, thus guaranteeing high and stable enough prices to poor farmers from disadvantaged regions, so as to allow them to live from their work and to invest and expand their business operations ;
- negotiate, product by product, international agreements fixing in an equitable manner an average purchase price on the international market, as well as the quantity and the export price allowed to each of these large markets, and if necessary, to each country.

The rise in agricultural prices will have to be gradual, so as to avoid negative consequences for poor consumers-buyers. In spite of this, it will probably be necessary to implement food aid policies. But, instead of founding these policies on low-cost food distribution, which maintains peasant misery and reduces domestic markets, it will be convenient to support the food purchasing power of poor consumers, so as to expand domestic markets. Therefore, food aid policies could rely on food stamps, financed by state budgets or international aid, distributed to the needy and for free for the poorest, and exchangeable for food (as in the United States).

However, the rise of agricultural prices alone will not be enough to promote a balanced agricultural development in the various regions of the world, and to upgrade production so as to meet global needs. Agricultural development policies, regional (several countries) and national, will be needed also : land legislation guaranteeing broad access to the land and security of tenure (e.g. land reform, land-rental law, legislation against the accumulation of land, etc.) ; measures favoring broad access to credit, inputs and equipments ; public investments in agricultural infrastructures (e.g. irrigation, drainage, etc.), as well as transport and marketing infrastructures ; research and extension services targeted to the needs and means of the different regions and

groups of farmers, with the most disadvantaged as top priority; reduction of agricultural income disparities among regions and farms (e.g. differential land tax, gradual taxation on agricultural incomes, targeted aid, etc.).

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