VI THE PALESTINIAN PEOPLE AND THEIR FOOD AND AGRICULTURE ECONOMY

This chapter has three main parts: the trends in the demand for food, food availability, stability and distribution; the current food supply and demand situation; and the potential contribution of the agriculture sector to food availability.

Summary

The massive loss of jobs due to closures and curfews and the consequent unprecedented decline in per capita income (economic access to food) fundamentally changed the trend in food demand as well as the composition of the diet. Job growth had been exceeding growth in the labour force, and unemployment had been steadily declining, from 23.8 percent in 1996 to 10 percent by the third quarter of 2000. Population and incomes growth was strong enough under these circumstances to keep upward pressure on food prices.

But from the third to the fourth quarter of 2000 closures caused 67 000 to drop out of the labour force and the unemployment rate to jump from 10 percent to 28 percent. The reductions in disposable income and the associated cuts in expenditures, including for food, removed the upward pressure on food prices even though population growth continued unabated. Food prices were below the prior season average for the 2000/01 marketing year (October 2000 through September 2001) and increased by only 1.9 percent the following season. They increased more rapidly during the 2002/03 marketing year, by 4.3 percent, due mainly to the exceptional increase in the price of poultry meat.

The surge in food prices took place mainly in March-April 2003, led by poultry meat and also fuelled by sharp increases in vegetable and fruit prices. By April-May 2003 retail food prices were 8.4 percent above those of a year earlier, with most of the increase accounted for by these foods. The food price data indicated that the supplies of cereal products, red meat, eggs, oils and fats and sugar products were sufficient to keep prices below or well below the all-food index. The retail price data therefore indicated that the supply of the main internally produced foods was tighter than a year ago but also that the commercial importers and food aid agencies had managed to keep supplies in line with consumption requirement for cereals, sugar and vegetable oils, with the latter aided by the excess supply of olive oil. However, the price increases for vegetables and fruits were short lived, as they declined over the balance of the marketing year to levels that indicated quite ample supplies. In contrast, poultry meat prices remained high and ended the season at a record level about 30 percent above January 2003.

Food energy consumption during 1996-98 averaged 2 114 kcal and 56.3 grams of protein per person per day, according to PCBS. The food energy amount was essentially equal to the 2 100 kcal threshold considered sufficient if distributed equally for those engaged in light physical activity to meet their daily energy requirements, while the amount of protein consumed was slightly (6 percent) above the threshold. But the food supply was not equally distributed and as there were some engaged in moderate to heavy work it may be assumed that there was a significant share of the population at that time who were food insecure. The food consumption patterns in the Gaza Strip and among the governorates in the West Bank clearly indicate substantial differences from one geographic area to another with respect to the sufficiency and quality of the supply of food.

The massive loss of earnings and incomes since September 2000 has led to a major reallocation of cash expenditure patterns and to reductions in both the quantity and quality of food consumption, as documented in the previous two chapters. Annual expenditures for food on a per person basis averaged US$541 during 1996-98 and due to price inflation that food package would have cost about US$734 by April 2003. But by 2002 per capita income in nominal terms already was 33 percent below the level of 1997, which, assuming a continuation of 40 percent of cash expenditures allocated to food would mean only US$362 available to be spent for food, an amount just under one-half the cost of the food package purchased in 1996-98. With per capita income believed to be even lower in 2003 than it was in 2002, consumers have had to make a major reallocation in the composition of the food package over the last three seasons, shifting towards the low cost high energy cereals, sugar and oils and fats and away from the higher cost animal products, fruits and vegetables, as has been reported in chapter V.

Food production on a per capita basis during the two marketing years after the initiation of closures and curfews (2000/01 and 2001/02) was down by 1.3 percent from the average for the prior two years and 6.2 percent below the average for the 1996/97-1997/98 marketing years. The early season expectations for food production during the 2002/03 marketing year were for a sharp drop from 2001/02, as the impact of closures and curfews was expected to be greater in the third season after its initiation than during its first two years, and the weather patterns were not expected to be as favourable as during 2001/02. Reductions from the prior season were expected for all the main food groups, vegetables, fruits, meat and milk. The gap between the food consumption

requirement and food production would have been much larger than ever before. Food imports would have to increase sharply to keep food insecurity from rising further. However, the seasonal retail price pattern suggests that growing conditions were better than anticipated and therefore that vegetable and fruit production was higher than expected early in the season. But the abnormally high price for poultry meat clearly indicates that meat production was lower than in the previous season. On balance food production most certainly was down from the relatively high level of 2002/03.

The detailed review of food availability leads to the overall conclusion that the contribution from agriculture on a per capita basis was gradually declining prior to the initiation of closures and curfews and that the decline has continued subsequently. The implication is that to maintain sufficient food supplies larger commercial and food aid imports were and will be required. The restrictions on the movement of goods and people have had a greater impact on the cost of food production than on production itself, due to the general decline in producer prices. The cost of producing food has continued to rise, and at an accelerated pace due to physical constraints, so with declining producer prices net income to producers has declined very sharply.

When measured in quantity or value terms most of the food consumed by those living in the West Bank and the Gaza Strip is produced within the areas, but when measured in terms of food energy most of the calories come from external sources. According to the 1996-98 survey results, over 75 percent of the food energy came from cereal products, sweeteners and oils and fats and only about 10 percent of the calories came from locally produced wheat and olive oil. Imported cereals, sugar and vegetable oils therefore accounted for about 65 percent of the food energy and other imported foods, especially dairy products, added to the total. In value terms vegetable and meat production are the most important domestically produced foods, accounting for more than half of the total value of production. Fruits and nuts, olives, milk, eggs, potatoes and fish are the other main foods. Wheat, honey and oilseeds combined account for less than two percent of the value of food production.

Prior to the imposition of closures and curfews the sector's difficulty in keeping food production moving upward fast enough to match population growth appear to stem from slow growth in productivity, water-related constrains and the carrying capacity of the land. The supply and cost of water limited the options on what to produce. The lack of a strong agricultural research and extension system left the technology transfer process largely to those who worked in Israeli agriculture. A large share of the area used to produce crops did not have access to water for irrigation and therefore relied on rainfall which in some years was very favourable to plant production and in others it was not. There were problems with animal diseases and concerns over the carrying capacity of the land grazed by ever more animals.

There is considerable instability in food supplies, arising from the extreme year-to-year variation in the production of plant products. This instability in food production is not fully offset by the subsequent changes in food trade and aid. In recent years the value of food production has increased by 23.3 percent and 27.8 percent from one year to the next, and decreased by 19.8 percent and 18.1 percent from one year to the next. Most of the year-to-year variability is associated with plant products and stems largely from changes in the amount of rainfall and the cyclical nature of olive production. Most of the change from year-to-year in food production is associated with olive production.

The slow drift downward in the ability of the sector to contribute to food availability has been accentuated by the events of the past three years. Vegetable producers have managed the constraints better than most, although they have experienced some serious marketing problems. Poultry meat, egg, fish, citrus, strawberry and banana producers have experienced the most difficult problems. Producers who rely heavily upon imported inputs have been very seriously affected by the closures and curfews, both in terms of getting inputs when needed and indirectly due to much higher transportation costs. The impressive trend toward ever higher production of animal products has been slowed, and even reversed for eggs and poultry meat.

Although agricultural production has been adversely affected by closures and curfews, it has remained relatively stable compared to the widespread disruption in marketing, transportation, processing and distribution of agricultural inputs and products. The entire food system has been seriously affected by the disruptions to the transportation system. Checkpoints, blockades, the back-to-back system and destroyed or blocked roads have created logistical chaos and extreme transport cost increases. It has become impossible to move inputs to the producers or outputs (including food aid) to processors or to internal or external markets in a timely manner. The increase in the cost of transportation has been especially severe in the West Bank. Increased costs combined with weak producer and retail prices for food have created a severe cost/price squeeze and placed a hold on investment throughout the food chain.

As is almost always the case as economies develop, over the years the agriculture sector has become a smaller contributor to the gross domestic product as well as a lesser source of employment and income. This normal scenario has been interrupted by the closures as some of those who lost their jobs in the non-farm economy are returning to agriculture, although it now is clear that most of the fourth quarter 2002 increase in agricultural workers was seasonal. The large decline in agricultural production during the 2000/01 season pushed the value added by agriculture to a new low in absolute terms and relative to GDP. The cost of production exceeded the value added for the first time. The substantial increase in production in 2001/02 was not matched by a comparable increase in the value added by agriculture due to weak or declining producer prices. Nevertheless, there was an increase in the value added by the sector while the manufacturing and construction sectors were contracting, so in relative terms the contribution to the economy during 2001/02 was near or at the previous record. But this of course does not mean that the sector is doing well.

The closure related declines in food consumption and food prices limited the increase in producer prices or pushed them lower, while the cost of production continued to rise. Impediments to the smooth and timely flow of inputs to producers as well as the movement of their products to internal or external markets are behind the surge in the cost of production. The exceptional increase in the cost of transportation is a case in point, as is the exceptional increase in the cost of water and electricity over the past two years. The removal of restrictions on the movement of goods will provide a much more favourable environment for investment throughout the food sector.

The pre-closure surge in production of poultry meat, eggs and cow milk was fuelled mainly by imported feedstuffs, and the potential for the sector to even maintain its share of the animal feed market is questionable. There would, however, appear to be potential for importing more raw products and processing a larger share of the feedstuffs required by an expanding animal agriculture. The sheep and goat population has expanded to a level where the carrying capacity of the land appears to be overtaxed, raising concerns about the productivity of the lands they rely upon. There also is concern over the ability to control animal diseases, a concern that has become greater after closures have been imposed. These matters must be attended.

Once the physical restraints are removed and the settlement and separation barrier issues are resolved so that producers of animal products can have free access to their animals and can get the inputs they need and get them on time, there is potential for better control of animal diseases and further gains in productivity and production mainly with respect to poultry and dairy products. But these gains will come, if they do, mainly from imported inputs and therefore producers will be subject to the policies of the countries that are providing them. At present the producers benefit from the policies of the main exporters of feedstuffs as they keep prices lower than would be the case in a free market, but they also suffer from the subsidization policies of Israel which makes it more difficult to compete and encourages consumers to turn to food from Israel.

The longer term declines in production of citrus, bananas, melons and cut flowers suggest that the availability of these products is likely to continue to become more limited. This raises the broader question about the potential for open field irrigation of fruit trees generally and even of vegetables produced under these systems. Water supplies are limited and the availability of water for agriculture will become more so in the future. Over time the available water will have to be increasingly restricted to the highest value crops and will have to be used more efficiently everywhere. The more recent declines in strawberry production and the accelerated decline in the production of citrus, bananas, melons and cut flowers are linked to the events that have taken place subsequent to September 2000 and therefore can be reversed or tempered when restrictions on the movement of goods and people are removed and the military forces are withdrawn.

The greatest potential for agriculture's contribution to food availability among the plant products appears to lie with vegetables, and in particular with those that are grown in protected facilities. Previous studies show very high net financial margins for vegetables grown in greenhouses and the yields being obtained are high by world standards although not as high as those in Israel which rank among the highest in the world. But even here priority shall have to be given to the internal market, which will be expanding substantially even under current conditions and even faster once economic access to food begins to improve. The shift to protected facilities should continue, and steps taken to move productivity in these systems ever higher.

There appears to be a very low potential for increasing availability of cereals for food or feed, oilseeds for oil or meal, or sugar. All or a very high proportion of these high food energy products are being imported, most by commercial firms but complemented by an already substantial and growing share by the food aid interests. The cereals and oilseeds produced within the Territory cannot compete with the higher value crops for irrigation water and so will continue to depend upon rainfall. And in some years it will be adequate and in others it will not

be, so there will continue to be large year-to-year variation in production. The expectation is that imports will continue to provide a larger share of the availability of the high food energy products, be they destined for human or animal consumption. Food security therefore will depend even more than at present on the quantity of imported foods.

Olive production also can be expected to continue to exhibit extreme year-to-year shifts from too little oil to satisfy domestic needs one year and a large excess the next. But even here the consumption requirement is gaining on production and will continue to do so unless a major effort is made to increase productivity, which by now is relatively low.

In summary, the agricultural sector will be hard pressed to maintain its contribution to food availability and as long as the crisis persists the contribution will continue to decline. After these constraints are relaxed or removed there could be a time when the contribution moves back towards its pre-crisis share. To ensure this, major efforts should be made now to enhance productivity, use water more efficiently and protect the land from degradation due to overgrazing and other practices.

TRENDS IN THE DEMAND FOR FOOD

Population

The Palestinian population is estimated at 3.6 million on 1 April 2003, the mid-point of the agricultural marketing year which begins 1 October and ends 30 September of the following year. The previously reported mid-year population projections from the PCBS are adjusted to a marketing year basis for this chapter of the report as follows.

Table VI.1: Estimated Palestinian Population on 1 April (000)

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
2645.4	2755.6	2868.9	2989.9	3119.0	3265.4	3428.0	3598.6	3769.0	3947.5

Source: Calculated from PCBS mid-year population projections, medium series, including Jerusalem

The PCBS projections place the rate of growth for the West Bank and Gaza Strip near 5 percent at present, with growth rates around 4.7 percent for the West Bank and 5.4 percent for the Gaza Strip. From mid-2003 to mid-2005 the growth rates are expected to decline to 4.7 percent, 4.4 percent and 5.2 percent for the entire area, the West Bank and the Gaza Strip. Total food supplies therefore must rise by at least 4.7 percent just to keep per capita food consumption at its present relatively low level.

Per Capita Income

According to the PCBS and the World Bank, for the WBGS, excluding East Jerusalem, the gross national income (GNI) per capita in current dollars was US$1 710 in 1995. It declined in 1996, 1999, 2001 and 2002, while the increasing years were 1997, 1998 and 2000. The best years were 1998 and 2000, when it reached US$1 852 and US$1 839 and the worst years by far were 2001 and 2002, when it fell to US$1 462 for 2001 and to US$1 166 for 2002. In current dollars these were exceptional declines of 20.5 percent and 20.25 percent and after adjusting for price inflation are calculated to have been declines of 23 percent for both years. Another but more modest decline in per capita GNI is believed to have taken place in 2003.

These estimates place per capita GNI for the WBGS (excluding East Jerusalem) for 2002 at least 35 percent below the average for 1996-2000, and in real terms 46 percent below 1999, to a level not seen before in the PCBS data series. Further, the share of the population below the poverty line was calculated by the World Bank to be around 59 percent in 2002 and 60 percent early in 2003, compared with averages of around 25 percent for 1996-2000, 20 percent for 1999, 31 percent for 2000 and 46 percent for 2001.

PCBS surveys of household consumption during 1996-98 led to the conclusion that the cash expenditure for food by the Palestinian people ranged between 38 percent and 41 percent of total cash expenditures. The food component of the Consumer Price Index now receives a weight of 40.56 percent for the entire WBGS. Since around 40 percent of cash expenditure is spent for food, the sharp declines in per capita income (economic access to food) would have exerted strong downward pressure on the effective demand for food, around 8-9 percent for both 2001 and 2002. As documented in the previous chapter, there have been sharp declines in the quality and quantity of food consumption and especially in high cost food energy foods, including animal

products.

Food Prices

Food prices moved up at a rapid pace over the three marketing years ending with September 1999, exceptionally from 1997/98 to 1998/99, but then by only 1.4 percent in the 1999/2000 marketing year, when food supplies were more sufficient due to record harvests. Food prices fell during the first full marketing year of closures and curfews, as the sharp decline in economic access to food led to modifications in expenditure patterns, including for food even though food production was down sharply from the previous season. Food prices increased from 2000/01 to 2001/2002, the second full year after the second *Intifada*, by 1.9 percent, but because they declined during the previous year were only 1.2 percent above the 1999/2000 level.

However, food prices moved up at a faster pace during the 2002/03 marketing year, by 4.3 percent. Although prices were reported to be below the September level during the last quarter of 2002 they started to rise again early in 2003 and by April 2003 they were 7.5 percent above the April 2002 level. From December 2002 to April 2003 food prices increased by 7.4 percent in the Gaza Strip and by 7.2 percent in the West Bank excluding Jerusalem, a marked contrast to the modest 1.7 percent in Jerusalem. After peaking in April food prices drifted lower through August, which pushed the increase for the season down to 4.3 percent. By September 2003 food prices were only 7.4 percent higher than during September 2000.

Table VI.2: Food Price Index and Percent Change: Marketing Years (1996=100)

Marketing Year	Food Price Index	Percent Change: MY (%)
1996/1997	104.77	4.77
1997/1998	109.97	4.96
1998/1999	119.65	8.80
1999/2000	121.30	1.38
2000/2001	120.50	-0.66
2001/2002	122.79	1.90
2002/2003	128.08	4.31

Source: PCBS Quarterly CPI Reports.

From 1996 to 1999 the increases in food prices were about in line with inflation in consumer prices generally although from 1998 to 1999 food price inflation was lower than for all items. But the increase in consumer prices from September 2000 to September 2003, at 12.8 percent, was far above the 7.4 percent increase in food prices. The main driving force behind the more rapid rise in the consumer price index was the surge in the prices for transport and communications which was the consequence of closures, checkpoints, blockades, destroyed roads and the back-to-back system where goods are offloaded, inspected and reloaded. By September 2003 these prices were 42.5 percent above September 2000, dominated by the 52.4 percent increase in the West Bank excluding Jerusalem while they were only 15 percent higher in either the Gaza Strip or Jerusalem. Higher transportation costs also affect the cost of producing food, and because these costs have risen much faster within the West Bank than elsewhere the cost of producing food within the West Bank has also risen faster.

To summarize by geographic area, from September 2000 to September 2003 the increase in food prices for the West Bank excluding Jerusalem was 5.8 percent, compared to 4.2 percent and 8.6 percent for the Gaza Strip and Jerusalem. The increases in prices generally from September 2000 to September 2003 were 14 percent for the West Bank excluding Jerusalem, 11.8 percent for Jerusalem and only 5 percent for the Gaza Strip. It is interesting to note that the percentage increase for all items was significantly lower in the Gaza Strip than elsewhere and that the increase there was only slightly higher than that for food (5 percent versus 4.2 percent). In Jerusalem consumer prices were 11.8 percent higher while food prices were 8.6 percent higher and in the West Bank excluding Jerusalem consumer prices were 14 percent higher while food prices were 5.8 percent higher.

The Effective Demand for Food

The driving forces behind changes in the effective demand for food are the number of people, the funds they are able to allocate to food (economic access) and the cost of the available supply of food. The increase in the Palestinian population from 1 April 1996 to 1 April 2003 is believed to be at least 950 000 persons. The annual rate of growth in the population has varied some but has been relatively stable compared to the changes in

disposable income. The absolute growth in population has been larger every year and will continue on this path for some years. The macro economic data suggest that the people had more money to spend in 1997, 1998 and 2000 than the year before, but less in 1999 and much less in 2001 and 2002.

The year 1996 was a difficult one for the Palestinians, with 23.8 percent of those participating in the labour force being unemployed and with prices for all items including food moving up quite rapidly. The population was increasing faster than normal, with the natural rate of increase aided by returnees who had been working abroad, and per capita GNI was declining. The food demand factors therefore were working at cross purposes, pushed forward by population growth and downward by higher prices and reduced earnings. The next three years were more favorable to food demand, with unemployment declining to 20.3 percent in 1997, 14.4 percent in 1998 and 11.8 percent in 1999 and per capita GNI rising from 1996 to 1998. A growing population and rising incomes continued to push prices higher, especially from 1997/98 to 1998/99 when food supplies were less sufficient than during the prior year. The food price increases from the 1996/97 season to the 1999/2000 season indicated that the basic demand forces were strong relative to available food supplies.

The story since the 1999/2000 season differs greatly. Food prices rose slowly from 1999 to 2000. Food production was higher during the 1999/2000 marketing year and even though the demand factors until September 2000 were quite favorable to growth in food consumption the supply appears to have been quite adequate with food production setting a new record. In September 2000 progress towards lower unemployment was abruptly reversed and the number of unemployed increased sharply, just when the potential labour force was expanding faster than ever before. Per capita GNI fell in 2001 and again in 2002 at unprecedented rates. And according to the projections the population was growing at an even faster rate these years. The harvests were less abundant in 2000/2001, but with the unemployment rate still rising, another decrease in per capita income and a large increase in food aid, the lid was kept on food prices. Food production was higher in 2001/02 as the more favourable weather patterns more than offset the negative impact of closures on production.

The potential demand for food is huge. Although the rate of growth in population may be peaking the absolute increase this season and for several to come will be larger than ever before. The labour force survey for the last quarter of 2002, the first quarter of the 2002/03 marketing year, revealed that there had been significant increases in employment and reductions in unemployment, indicating stronger effective demand for food. Unfortunately, employment declined and unemployment increased again early in 2003. The increases in employment and earnings during the last quarter of 2002 provided a temporary stimulus to the effective demand for food and this, combined with the expectation that food production in 2002/03 would fall below that of the previous season due to the impact of the closures and less favourable weather patterns for plant production, stimulated an increase in food prices. The reductions in employment and earnings early in 2003 together (decline in economic access to food) with a substantial increase in food aid (increase in social access to food) and better than expected weather patterns for plant growth (more sufficient food supply) led to declines in food prices from April through August 2003.

FOOD AVAILABILITY, STABILITY AND DISTRIBUTION

The brief review of the food demand factors sets the stage for a closer look at food availability, stability and distribution. First the findings related to food availability from PCBS household surveys are reviewed, and then the evolution of food supplies over the six years ending with the 2001/02 marketing year, 30 September 2002 is reviewed.

Food Consumption during 1996-98

Food availability was measured by the Palestinian Central Bureau of Statistics (PCBS) for the years 1996 through 1998 when conducting household surveys in the West Bank, its main governorates, and the Gaza Strip. In addition to providing detailed data on monthly food consumption by the households, the amount spent for food as well as the food energy and nutrients obtained from the foods were reported. The food consumption data have been converted to an annual average for the WBGS, on a per person basis.

Table VI.3: Annual Consumption of Food Products per Person – West Bank and Gaza Strip (1996-1998 Averages)

Foods and Groups	Kg per year	Foods and Groups	Kg per year
Cereals and bread	**105.28**	**Oils and Fats**	**11.14**
Rice	19.53	Olive Oil	3.96
Flour	46.19	Vegetable Oil	5.88
Wheat	13.25	Animal fat	1.30
Bread	17.62	**Fruits & Juices**	**54.13**
Other cereal products	8.69	Fresh Citrus	12.52
Meat, Poultry, Fish	**39.23**	Fresh Melons	14.15
Red meat	10.73	Other Fruit	21.33
Poultry	26.15	Juices	6.13
Fish	2.36	**Nuts & Seeds**	**1.88**
Dairy Products & Eggs	**23.77**	**Vegetables**	**79.69**
Milk	6.99	**Tubers**	**17.61**
Yoghurt	6.07	**Sugar, Chocolate, Sweets**	**25.24**
Cheese, Butter, Ice Cream	3.11	Sugar	22.77
Eggs	7.59	Legumes	4.55
Salt, spices, misc.	**6.91**	**Coffee, tea, cocoa**	**1.66**

Source: Calculated from PCBS household survey reports

According to these highly summarized results, the main food groups when measured in terms of kilograms per person per year were cereals and bread, vegetables and fruits. Meat and fish, sugars and dairy products came next, followed by tubers, oils and fats, salt and spices, legumes and beverages. The food consumption pattern varied significantly between the West Bank and Gaza Strip, and from one West Bank governorate to another. West Bank residents in general, and in particular the three highest income governorates, consumed more of essentially every food group although the quantities of vegetables and fruits were quite similar. Those living in the Gaza Strip and the lower income West Bank governorates consumed a smaller quantity of animal products and relatively more plant products.

Food Energy and Protein

According to the PCBS household survey results, food energy and protein consumption by the Palestinian people averaged 2 114 kcal and 56.3 g of protein during 1996-98. The food energy amount was essentially equal to the 2 100 kcal threshold considered sufficient if distributed equally for those engaged in light physical activity to meet their daily energy requirements, while the protein consumed was slightly above (6 percent) the 53 g threshold. The food energy and protein consumption patterns for the surveyed Governorates and the Gaza Strip in calories and grams per person per day were as follows:

- 2 445 kcal and 66.7 g for Bethlehem/Jericho, 2 427.5 kcal 65 g for Ramallah and 2 415 kcal and 70.5 g for Jerusalem.
- 2 188 kcal and 60.3 g for Tulkarem, 2 177 kcal and 57.9 g for Hebron and 2141 kcal and 57.4 g for Qalqilia.
- 2 064 kcal and 55.4 g for Nablus and 2 005 kcal and 50.8 g for Jenin.
- 1 912 kcal and 48.8 g for the Gaza Strip.

Those living in the Bethlehem/Jericho, Ramallah or Jerusalem governorates had access to considerably higher levels of food energy and protein than those in the rest of the West Bank governorates or in the Gaza Strip. These data show highly significant differences in access to food from one governorate to another, and suggest that there likely were even greater differences at more disaggregate levels.

When the annual consumption of the various foods is converted to kcal per person per day the Palestinian people were obtaining about one-half of their calories (49 percent) from bread and other cereal products. The two other main sources of food energy were oils and fats and sweeteners, mainly sugar, with each group accounting for a

little over 13 percent of the total. These three food groups therefore accounted for 75.5 percent of the total calories while red and white meat contributed nearly 10 percent, leaving rather small shares for dairy products, eggs, fruits, vegetables, nuts, legumes, tubers and other foods.

The sources of food energy and protein differed significantly from one area to another. Those with the lowest levels of food energy and protein consumed fewer calories in total and relied upon plant products, and especially cereal-based products, to a greater degree than the high food energy and protein areas. Animal products accounted for a considerably larger share of the calories and protein consumed in the high food energy areas, and, in general, in the West Bank where the supply of animal products is more sufficient.

Although the levels of food energy and protein consumed during 1996-98 indicate that in general the Palestinian population was relatively food secure, as the food supply was not equally distributed and as there were some engaged in moderate to heavy work, it may be assumed that there was a significant share of the population who were food insecure. The data indicate that West Bank residents were substantially more food secure than those living in the Gaza Strip and also that the food insecure share of the population was substantially higher in the Gaza Strip and in the Jenin and Nablus governorates than elsewhere.

Expenditures for Food

PCBS reported the average monthly household consumption expenditures for each of the three years (1996-98) for the West Bank and the Gaza Strip separately and combined. These data have been converted from Jordanian Dinar to US Dollar and from a monthly basis per household to an annual basis per person. The shares of total cash expenditures that were allocated for food averaged 38.3 percent for the Gaza Strip and 39.5 percent for the West Bank over these three years.

Table VI.4: Annual Expenditures for Food per Person (1996-1998)

Item of Expenditure:	WEST BANK (US$)	GAZA STRIP (US$)	PALESTINIANS (US$)
Bread and cereals	101.72	71.78	91.60
Meat and poultry	170.74	82.99	140.93
Fish/sea products	8.80	11.79	9.84
Dairy products/eggs	56.44	28.46	46.95
Oil and fats	23.47	19.66	22.18
Fruits and nuts	55.88	43.48	51.73
Veg/legumes/tubers	82.30	59.84	74.76
Sugar/confectionary	33.06	27.05	31.07
Sub-totals	532.41	345.05	469.06
Other items	81.06	54.44	72.09
Total expenditure	613.47	399.49	541.15

Source: Calculated from PCBS household survey reports

Expenditures for food were significantly higher in the West Bank. On a per person basis the average yearly amount spent for the items in the food basket was US$400 for those living in the Gaza Strip and US$613 for the West Bank residents, or 54 percent more. Gaza Strip households allocated a smaller amount of their more limited income to every food group except fish. Further, they allocated a higher share of their income to every plant product group (bread and cereals; oils and fats; fruits and nuts; vegetables, legumes and tubers; sugar) and lower shares to meat, dairy products and eggs. The value of own produced food was relatively small, equivalent to nearly 5 percent of food expenditures in the West Bank but less than 2 percent in the Gaza Strip.

For the WBGS as a whole, meat, poultry and fish accounted for nearly 28 percent of total cash expenditures, followed by bread and cereals at nearly 17 percent. Vegetable, legume and tuber expenditures represented nearly 14 percent of the total, followed by fruits and nuts (9.6 percent), dairy products and eggs (8.7 percent), sugar and confectionary (5.7 percent) and oils and fats (4.1 percent). Non-alcoholic beverages, salt, spices and other foods, and take away food and meals in restaurants captured the remaining 13 percent of total expenditures.

The food expenditure pattern for the WBGS stands in sharp contrast to that with respect to the contribution of the

various food groups to food energy or to the quantities consumed. The 49 percent of food energy obtained from bread and cereals required only 17 percent of the total cash expenditures for food while the 10 percent contribution to food energy from meat, poultry and fish took nearly 28 percent of the funds allocated to food. And the 4.1 percent spent for edible oils and the 5.7 percent spent for sugar each provided 13 percent of the calories. Vegetables, fruit, dairy products and eggs captured a substantially larger share of expenditures than was their share as a source of food energy. Non-alcoholic beverages, salt and spices contributed little to food energy but captured a significant share of the total expenditures.

Table VI.5: Food, Cash Expenditure and Food Energy Shares by Food Group, 1996-98 (%)

Food Group	Kg/person/yr	Kcal/person/day	Cash expenditure
Cereals and bread	28.4%	49.1%	16.9%
Meat, poultry, fish	10.6%	9.9%	27.9%
Dairy products & eggs	6.4%	3.9%	8.7%
Oils and fats	3.0%	13.3%	4.1%
Fruits and nuts	15.1%	4.7%	9.6%
Vegetables/legumes/tubers	27.4%	6.1%	13.8%
Sugar/confectionary	6.8%	13.1%	5.7%
Tea, spices, salt, etc.	2.3%	Negligible	13.3%

Source: Calculated from PCBS household survey reports

What these comparisons illustrate is that much more energy can be obtained from the expenditure of a given amount of money on cereals, sugar and edible oils than from the other food products. This is the reason why those with low income or those experiencing a decline in income allocate their limited income more in favour of cereals, sugar and vegetable oils instead of animal products, vegetables or fruit.

An indication of the situation the Palestinians find themselves in can be seen by noting that to purchase the US$541 food package consumed in 1996-98 in April 2003 would have cost US$734 due to price inflation (up 35.7 percent) and that per capita income in 2002 was down 33 percent from 1997 in nominal terms and must have been even lower by April 2003. If as then 40 percent of cash expenditures were allocated to food even at the 2002 income level the amount spent for food would have been US$362, just under half the cost of the 1996-98 food package. A 2 100 kcal food package could be bought in 2003 with US$362, but to do so would require a major change in the quality of the diet, relying far more on cereals, sugar and oils and fats. It is no wonder that surveys have found that both the quality and quantity of food has been reduced over the past three years.

Food Supplies from 1996-97 to 2001/02

Bearing in mind the above results, the supply of food from internal and external sources from 1996 to 2002 is analyzed. Food supplies arise from production and imports, including imported food aid. When measured in quantity or value terms most of the food consumed by those living in the West Bank and the Gaza Strip is produced within the areas, but when measured in terms of food energy most of the calories come from external sources.

Value of Food Production

The first review is that of the value of food production, which here excludes the non-food crops from the PCBS data on the value of agricultural production. The value data for the food groups is presented from the 1996/97 through the 2000/01 marketing years, as only aggregate value data are available for the 2001/02 marketing year. Value data for the 2002/03 season are not available.

There is considerable variation from year-to-year in the aggregate value, which is due mainly to the large year-to-year swings in olive production but also to the impact of good or bad weather on the production of the other main plant products and to changes in producer prices relative to the costs of production. The years 1997/98, 1999/00 and 2001/02 were good weather years and "on" years for olives. As a result the value of production reached high levels these years. In contrast, the years 1998/99 and 2000/01 were among the worst with respect to the weather and "off" years for olives, so there were serious declines in production and value, especially but not only for the crops that mainly or entirely rely upon rainfall for growth. When rainfall is inadequate the supply of water for irrigation also declines.

From a value perspective, the main food products that are produced in the West Bank and Gaza Strip are vegetables, meat, fruit and nuts, olives and milk. These five groups accounted for 90 percent of the total value of food production on average for 1996/97-2000/01. At the other extreme are sweeteners and food cereals, with the values of honey and wheat accounting for 0.4 percent and 1.1 percent of the total value. Olives, the main source of year-to-year variability in the total value, accounted for 5.1 percent of the value in 1998/99, and over 20 percent in both 1997/98 and 1999/00.

When placed on a per capita basis the value of production data show a declining trend. Even though the value of production was at an all time high in 1999/00 the increase in population resulted in the per person value dropping below the previous record year of 1997/98. The value of production was higher on average for 1998/99-1999/00 than for 1996/97-1997/98 but on a per capita basis it was down by 7.2 percent. Further, the per person values for 2000/01-2001/02, the first two full years of closures and curfews, was off from the average for the previous two seasons by 13.2 percent. However, a large share of these declines were due to lower producer prices

For the 2000/01 season the sharp drop in the value of food production was mainly due to the weather induced decline in plant production and the extremely low olive harvest but producer prices were lower also, especially for meat. Food production during the 2001/02 season was up by about 19 percent due to ample rainfall and an exceptionally good olive harvest. But the value of production was only up 7 percent as producer prices declined, and the increase in population cut the gain in value per person to around 2 percent. Producer prices in general declined over the two seasons after the beginning of the *Intifada,* especially for the high value food energy products. They clearly were affected by the reallocations and reductions in expenditures induced by the freefall in earnings and incomes.

Table VI.6: Value of Food Production (Values in 000 US$)

Year	1996/97	1997/98	1998/99	1999/00	2000/01	1996-98	1998-00
Population (000)	2755.62	2868.86	2989.9	3118.97	3265.4	Averages	Averages
Value of Production:							
Milk	66533	73437	78157	72885	102207	69985	75521
Eggs	36223	35323	34347	41501	41644	35773	37924
Meat	184229	209112	217221	215417	205817	196671	216319
Fish	10082	11823	11585	10394	8615	10953	10990
Honey	5185	4606	2219	1280	2925	4896	1750
Vegetables	216177	212062	214401	235747	219012	214120	225074
Fruits & nuts	118185	149210	117860	128002	115073	133698	122931
Wheat	9473	10725	3697	14019	6232	10099	8858
Olives & Oilseeds	74508	187104	37736	192527	46197	130807	115132
Potatoes	17941	16636	13820	17399	14717	17289	15610
Legumes	2895	2997	1168	3618	2041	2946	2393
Spices	468	1434	1052	4257	3181	951	2655
Total Value	741899	914469	733263	937046	767661	828184	835155
Value per person	$269.23	$318.75	$245.25	$300.43	$235.09	$294.49	$273.42
Value excluding olives/oilseeds	667391	727365	695527	744519	721464	697377	720023
Value per person	$242.19	$253.54	$232.63	$238.71	$220.94	$247.86	$235.67

Source: Calculated from PCBS data.

Value of Food Trade

Data on food imports and exports are available only until 2000 and only in value terms except for 2000 and some partial data on exports subsequently. Food imports, exports and the net values from 1996 to 2000 for the main food groups are given in Annex Table 2, and the net trade values are presented below. The food import value data excludes the quantities imported for the food aid programs.

The value of imports reached US$415.6 million in 1999, following the disastrous harvests of the 1998/99 marketing year, and fell to US$313.1 million in 2000, following exceptionally good harvests. The average for 1999 and 2000, however, at US$364.3 million was almost the same as the US$366.6 million for the two previous years. Food cereals and preparations account for the largest share of imports, ranging from one-quarter to one-third of the total value each year. The import values for dairy products and meat trended downwards due to the surge in production these years, so by 2000 fruits and sugar were the second and third largest imported items in value terms. There were significant declines in the values for sugar and cereals, partially due to declines in world prices.

After ranging between US$61 and US$63 million from 1997 to 1999 the value of exports increased to US$83.3 million for 2000, following the exceptional harvests during the 1999/2000 marketing year. Vegetables are the largest earner of foreign exchange, followed by fruits. By 1999-2000 these two food groups accounted for 65 percent of the export value, up from 55 percent the previous two years.

The decline in the value of imports combined with the increase in the value of exports led to a sharp 35 percent decline in the value of net imports for 2000. Following good weather years such as 1997/98 and 1999/00 the vegetable sector becomes a net exporter, the only food group in this position. Cereals at 39 percent, sugar at 14.5 percent, the two main sources of food energy, accounted for the largest share of net imports. These were followed by fruits and nuts and dairy products. Dairy product imports declined sharply but still required US$29 million for imported products, mainly cheese.

On a per capita basis, the value of net food imports averaged US$102 over the five years, and ranged from a high of US$118.50 for 1999, following a low production year, to a low of US$73.65 for 2000, following an exceptional production year. The averages for 1997-1998 and 1999-2000 on a per person basis show a decline of 11 percent. The much larger decrease from 1999 to 2000 was mainly the consequence of good weather patterns during the growing season and large harvests but also of continued strong growth in livestock production and declining world trade prices for some commodities.

Table VI.7: Net Food Import Values 1996-2000 (000 US$)

	1996	1997	1998	1999	2000	97-98	99-00
Dairy products	23139	77391	40363	42249	16009	58877	29129
Eggs	1633	3476	4652	3948	4803	4064	4376
Meat and meat preparations	13622	18246	28379	14916	11680	23313	13298
Fish	3679	4795	5284	6844	4779	5040	5812
Sugar, preparations & honey	44484	57178	43494	45823	38939	50336	42381
Vegetables	5889	3354	-6512	7782	-5927	-1579	928
Fruits and nuts	18801	19110	26861	39697	24018	22986	31858
Food cereals & preparations	105833	89751	99650	135680	94101	94701	114891
Edible oils and fats	17077	18833	17858	19409	12143	18346	15776
Coffee, tea, cocoa, spices	21676	20032	17741	20664	11118	18887	15891
Other edible products	6629	8131	10679	17279	18053	9405	17675
Total net food imports	262462	320297	288449	354309	229716	304373	292013
Value per person	$99.22	$116.23	$100.54	$118.50	$73.65	$108.39	$96.08

Source: Calculated from PCBS trade data.

The value of net meat imports peaked in 1988 and then declined quite rapidly due to the steady gains in meat production and especially in white meat during these years. Net fish imports reached new highs each year until 2000, but then were cut sharply. Dairy product and egg imports were quite exceptional in 1997, and 1999 was the peak year for fruits and vegetables, following poor harvests. Food cereal net import values climbed to a new high in 1999 and then fell sharply in 2000. The main reasons appear to be good harvests and lower food import prices, although exports and imports could have been affected by the closures during the last months of 2000.

Israel is the most important source of trade for every food group, but especially for meat, dairy products and fish.

However, trade with other countries was substantial for a number of commodities. Both quantity and value data for trade in food and agriculture products are available only for 2000. These data indicate that the prices paid by the Palestinians for imports from Israel were far above the world market prices. For meat and meat preparations the reported per tonne value for imports was US$3 500 a tonne, when the world price was around US$1 950 a tonne, with sheep meat at US$2,413 and poultry meat at US$1 083 per tonne. For cereals and preparations the reported price for imports from Israel was US$670 a tonne, when the world price for wheat was at US$205 a tonne. And for sugar and sugar preparations the reported import price was US$1 030 a tonne, compared with the US$326 a tonne on the world market for refined sugar. These large differences are due to the tariffs applied to imports and to the trade being in more highly processed food products. The following tabulation includes trade in live animals and animal feed products. In addition to feedstuffs for livestock the data for cereals includes those imported for animal feed.

Table VI.8: Total Quantities and Value of Agricultural Imports and Exports by Country of Origin and Destination, 2000

	Country of Origin and Destination (Quantity in metric tonnes)					Country of Origin and Destination (Value in 000 US dollars)				
	Israel		Other Countries		Net Trade Balance (quantity)	Israel		Other Countries		Net Trade Balance (value)
	Imports	Exports	Imports	Exports		Imports	Exports	Imports	Exports	
Live animals	4 923	173	3	0	-4 753	40 376	1 300	19	2	- 39 094
Meat & preparations	3 593	624	800	850	-2 919	12 578	1 273	1 763	1 389	-11 680
Dairy products & eggs	12 915	1 910	392	18	-11 379	23 247	3 410	1 000	27	-20 810
Fish	1 000	451	226	451	-324	5 703	2 213	1 289	2 213	-4 414
Cereals and cereal preparations	150 183	4 913	42 605	8	-187 867	100 623	3 328	29 824	24	-127 095
Vegetables and fruit	127 194	77 972	54 623	50 295	-53 550	66 141	41 027	9 511	18 976	-34 580
Sugar, prep & honey	34 780	2 649	27 571	10	-59 692	35 830	2 770	5 908	29	-38 939
Feeding stuff for livestock	268 900	4 308	129 103	1	-393 694	59 160	958	126	4	-58 325

Source: PCBS

The Israeli policy of protective tariffs on agricultural products and inputs apply to the West Bank and Gaza Strip under the customs union agreed upon in 1994. Import tariffs for most agricultural products and inputs range from 100-350 percent. The result is that prices in the West Bank and Gaza Strip are significantly higher than world market prices for many products. In the olive sector, Israel had a protective import duty of 22.2 percent plus a charge of 5.7 shekels per kilo. This level has declined due to scheduled decreases in border protection agreed to by Israel in its WTO commitments on agriculture, causing Palestinian prices to drop.

Value of Production and Trade

When the data on the value of production and trade are combined the aggregate value during the last two years of the series (marketing years 1998/99-1999/00 combined with CY's 1999 and 2000) was essentially the same as for the first two years, US$1 073 million and US$1 083 million. But on a per capita basis the value of the available supply to the Palestinian people was down by 8.7 percent, from US$385 per person to US$351 per person.

TableVI.9: Combined Value of Production and Net Trade by Food Group (US$)

Food Group	1996/97	1997/98	1998/99	1999/00	96-98	99-00
Dairy	52.23	39.67	40.27	28.50	45.95	34.39
Eggs	14.41	13.93	12.81	14.85	14.17	13.83
Meat	73.48	82.78	77.64	72.81	78.13	75.23
Fish	5.40	5.96	6.16	4.86	5.68	5.51
Sweeteners	22.63	16.77	16.07	12.89	19.70	14.48
Vegetables	79.67	71.65	74.31	73.68	75.66	74.00
Fruits/nuts	49.83	61.37	52.70	48.74	55.60	50.72
Cereals	36.01	38.47	46.62	34.67	37.24	40.64
Oils & fats	33.87	71.44	19.11	65.62	52.66	42.37
Total US$ per person per year	367.51	402.05	345.69	356.63	384.78	351.16
Value of Total available supply (000's US$)	1 012 729	1 153 431	1 033 571	1 112 316	1 083 080	1 072 944

Source: PCBS.

These data show that food imports do not fully compensate for poor harvests (1998/99 and 1999) and that in years when production is high the reduction in net imports does not fully offset the increase in the value of production (1999/00 and 2000). The data also suggest that expenditures for food during 1997-98 may have been higher than during 1999-2000, by nearly nine percent on a per person basis. But these results are based on price and quantity data, and as previously noted, the world trade price for some imported food commodities were lower during 1999 and 2000 than they were in 1997 and 1998.

FOOD AVAILABILITY

In order to analyse the trends in food availability for the main food groups in quantity terms the trade data must be converted from values to quantities, as quantity data are not available for imports or exports with the exception of the highly aggregate data for 2000 (see above). For the food groups with significant quantities produced in the WBGS the unit values of production in US dollars are used to convert the value of imports into quantities. In cases where there is no local production, such as sugar and rice, the conversion must be based on world trade prices and retail prices. Annex Tables 3 and 4 provide details on the food availability and production estimates for the food groups. The import figures for 2000/01 and 2001/02 in the food availability table are not backed by official data as no such data were available. They are guesses on what might have been, given retail food price patterns, and the official estimates of production.

Dairy Products

Milk production exhibited a strong rising trend over these years, with cow milk rising the fastest and goat milk the slowest. Total milk production is reported to have risen from 115 089 tonnes in 1996/97 to 150 183 tonnes in 2000/01 and 172 220 in 2001/02. The 15 percent increase during the second year of closures and curfews is exceptional, but would be on trend with the annual increases of 12 percent, 9 percent and 7 percent for the previous three years.

As recently as 1998 and 1999 the equivalent of about 20 kg of milk per person was being imported, which when combined with production gave an availability of 62-63 kg per person. But the exceptional drop in imports in 2000, to less than 8 kg per person, was not fully offset by the near 9 percent increase in production, so availability fell to around 53 kg including food aid, which stimulated an increase in producer prices for milk. The 12 percent increase in production for the 2000/01 season was large enough to push per capita availability from production to 46 kg per person and the near 15 percent increase for 2001/02 means that milk producers provided just over 50 kg per person during that season.

Food aid apparently contributed the equivalent of less than 1 kg per person in 2000/01 and 2001/02, so the gap between production plus food aid and the indicated consumption requirement of 60 kg per person would have been over 14 kg for 2000/01 and near 9 kg per person in 2001/02. Commercial imports of these magnitudes are well below those in earlier years and therefore would not have taxed the capacity to do so, especially for 2001/02. However, the sharp reduction in earnings and incomes in both 2001 and 2002 tempered the demand for dairy products. Yet, producer prices for 2000/01 were reported to be sharply above the previous year, indicating

a relatively tight supply situation. The large indicated increase in production for 2001/02 together with food aid and a relatively modest amount of imports would have brought the availability to around 60 kg per person which is believed to be the consumption requirement in normal times and therefore may be more than enough under present circumstances.

The data on milk production assumes that the productivity for sheep and goats has remained constant at 70 and 84 kg per animal over the past several years, a rather unlikely assumption. For cows the data for 1999/00 and 2001/02 show an increase in productivity, rising from 4 205 kg per cow to 4 891 kg. Difficulties in obtaining quality feeds due to closures and curfews could be expected to lower productivity but instead an increase is indicated. The estimates for 2001/02 are based on estimates of increases in animal numbers from the year before the initiation of the *Intifada* that are hard to believe, showing the number of goats increasing by 15 percent while sheep and cows are reported to have risen 34 percent and 13 percent. These are substantially larger increases than in prior years.

Eggs

Egg production was trending upwards, reaching an estimated 605 million eggs during 1999/2000, but remained at that level in 2000/2001, the first year of closures and curfews, and declined to 522 million for 2001/02, the second year of closures and curfews. From 1996/97 to 1999/00, the available supply averaged 196 eggs per person, with about 20 of them coming from imports. The supply was large enough to keep downward pressure on prices over these years. By 1999/00 the available supply had risen to 216 eggs per person and the producer price was down by 10 percent from the 1996/97 level. This, together with rapidly rising production costs, mainly due to closures and other curbs on transportation, led to the pause in production for 2000/01 and then to a significant decline in 2001/02. Egg producers appear to be very seriously affected by the restrictions on the movement of items needed in the production process.

The 2001/02 reduction of nearly 14 percent most likely is the consequence of the cost/price squeeze facing producers, which has been aggravated by closures and curfews, and the inability to obtain feed on schedule. Unless imports increased significantly in 2001/02 the available supply for 2001/02 would have been down to 170 eggs per person, 21 percent below the peak level two years before, and lower than anytime over the previous five years. Nevertheless, retail prices have remained relatively stable, showing no clear signs that the availability of eggs is inadequate relative to effective demand.

The egg production estimates assume that the productivity of the laying hens has been constant at 240 eggs per layer per year. The preliminary estimate of only 522 million eggs being produced therefore has a reduction in the number of layers from 2 518 thousand during the 1999/00 season to 2 171 thousand, a reduction of nearly 14 percent. In addition to the difficulties facing producers in obtaining the inputs needed to produce eggs they clearly have been experiencing rising costs of production, including the surge in the cost of transportation. With no noticeable gains in productivity and flat retail prices they appear to be in an extremely difficult cost/price squeeze.

Meat

Meat production reportedly increased sharply from the 81 625 tonnes in 1996/1997 to 107 330 tonnes in 2000/2001 and then to 113 746 tonnes in 2001/02. The pre-2001/02 7.1 percent annual rate of growth for total meat production was stimulated by the strong rate of growth for cattle meat and the exceptional growth in broiler meat production. White (broiler) meat dominated the meat market these years, accounting for 74 percent to 76 percent of total production. Per capita availability, including the relatively small quantities imported, moved from 32.5 to 37 kg of meat per person by 1998/99, enough to drive prices down about 13 percent. Both production and imports were down the following year, so availability dropped to a little over 33 kg and producer prices strengthened. The response was a large increase in production, enough to match the total availability of the prior year. This, together with an unknown quantity of imported meat was enough to move prices down again. However, the demand for meat must have also been affected by the sharp reduction in incomes consequent to the events beginning in September 2000.

Meat production for 2001/2002 is reported to have risen by 6 percent instead of declining as indicated by the preliminary estimate. Instead of declining by 37 percent white meat is reported to have increased by 2.1 percent. Red meat production is reported to have increased by an exceptional and hard to believe 18 percent, led by a 23 percent increase in sheep meat and associated with 13 percent increases for both goat and cattle meat. At these levels meat production remains above the consumption target of 32 kg per person and modest imports from

Israel add to the available supply.

Poultry meat producers have been affected by the restrictions on the movement of inputs and outputs, apparently to a greater degree than red meat producers. They rely heavily upon imported feeds and medicines that must be available on a precise time schedule. Closures and the other impediments to transportation make it essentially impossible to conform to the schedule, so productivity suffers. The timing problem is aggravated by the extreme increase in the cost of transport of inputs or to move the finished birds to slaughter and then on to the consumer.

Fish

Fish production, entirely in the Gaza Strip, had been trending downwards since 1998/99, with large reductions in 1999/2000 and 2000/2001, even though the decline has been associated with a strong up trend in the price of fish. The fishermen were catching 3.67 thousand tonnes of fish during the three years prior to the 1999/2000 season, but the catch for the next two years was reported to be only 2.62 and 2.14 thousand tonnes, the latter equivalent to only about two-thirds of a kg per person. However, they are reported to have caught 2.627 thousand tonnes of fish during the 2001/02 season. Including imports, the available supply of fish has declined from 2 kg per person to around 1 kg. However, a small quantity of tinned fish was being distributed by UNRWA.

Fishermen have been seriously affected by the events since September 2000, but the data indicate that they also were having problems before then. Earlier estimates of losses to the fishery sector since the beginning of the *al Aqsa Intifada* in September 2000 were estimated by the Palestinian Authority at US$5.5 million, of which US$700 000 was damage to equipment and boats. The damage continues, so the estimate of losses also continues to rise.

A significant share of fish production has always been exported, but a larger quantity has been imported. From 1997 to 2000 the value of fish exports averaged US$1.83 million, while the value of imports averaged US$7.25 million, leaving net imports at US$5.43 million. The gap peaked at US$6.8 million in 1999, and fell to US$4.8 million for 2000, just as production was declining. Trade data are not available after 2000, but commercial exports must have declined. Even in the current seriously depressed food market the fish price index remained far above the all-food index, indicating a longer term supply problem. The fish industry clearly is in a difficult situation. It needs assistance across the board.

Sweeteners

A relatively small and declining amount of honey is produced. On a per capita basis it declined from 224 grams in 1996/97 to 49 grams in 1999/00 before recovering to 107 grams in 2000/01 and remaining at that level in 2001/02. Even smaller quantities of sugar beets were reported to have been produced during the early years of the period under consideration, but no production has been reported since 1997/98. Although the number of beehives still is substantial, around 48 000, the number is below the mid-1999s level and productivity appears to be on a serious downhill slope.

The main sweetener is sugar. As reported above, PCBS reported monthly household consumption of sugar, chocolate, honey and other sweets for 1996-1998. When these data are converted to the amount per person per year the total consumption of sugar, chocolate, honey and other sweets reached 25.2 kg per person, with sugar accounting for 22.8 kg (90 percent). Chocolate, honey and sugar preparations represent a small share in quantity terms, but a kilogram of these products costs many times the refined sugar price. The annual consumption of sugar is believed to be around 29.5 kg per person at present. If so sugar imports would have been equivalent to about 100 000 tonnes during the 2001/02 season.

Over the four years 1997-2000 the value of imported sugar, sugar preparations and honey was reported to be US$198.8 million, for an annual average of US$49.7 million. At the prevailing world prices for sugar this amount would have enabled the importation of the equivalent of 136 000 tonnes of sugar a year, which would have provided an availability of nearly 46 kg per person. Alternatively, the US$49.7 million was equivalent to US$16.77 per person, an amount that would have been enough to purchase over 44 kg of sugar per person based on early 2003 prices. Obviously, not all the imports in this category were sugar and adding applicable tariffs to the world price reduces the quantities that could have been imported.

The data for 2000 had the US$41.7 million expended for sugar, sugar preparations and honey associated with only 62 351 tonnes, which is US$669 a tonne, an amount just over twice the then prevailing world price for

2000. However, the calculated price for the products imported from Israel was US$1 030 per tonne while the price for imports from other countries was US$214 a tonne. These data, together with the US$1 046 per tonne for exports to Israel, indicate that trade with Israel was in much more expensive sugar products, which carry values far above those for refined sugar. These data also indicate that sugar was imported from other countries at a price about 7 percent below the average world price for 2000. However, the quantity reported as imported in 2000 was equivalent to just under 20 kg of sugar, sugar preparations and honey, an amount well below the level of consumption two to four years before and even further below the amount that is believed to be consumed now. However, sugar is an important component of the food aid baskets, with the amount distributed equivalent to 2 to 3 kg per person in 2000/01 and 2001/02 which would have closed part of this gap, but not all of it. Nevertheless, the price of sugar at retail did not indicate that there was a tight supply situation with respect to sugar, as the price remained below the all food average.

Vegetables

The available supply of vegetables, here excluding melons and including onions and garlic, averaged 169.5 kg per person from 1996/97 to 1999/00. This was exactly the same as production, as exports and imports were in balance at US$27 million over the four years. Production ranged from 159 to 178 kg per person, with 1999/00 the best year in terms of total production until the 2001/02 season. However, on a per capita basis the 1999/00 season stands out, as production was equivalent to 178 kg per person. Production dropped to 167 kg per person in 2000/01 but then recovered to 171 kg for 2001/02. These data suggest that the consumption requirement for vegetables is around 170 kg per person. When the available supply exceeds this amount the excess is exported and when it falls below the deficit is covered by imports.

In terms of tonnage the most important crops are, in rank order, tomatoes, cucumber, squash, eggplant, dry onions, cauliflower, white cabbage and hot pepper. The production of hot pepper over the two years 2000/01 and 2001/02 was only slightly above the average for the two previous years and well below the average for the two years before that. But production on average for these two years was record high for the seven other major vegetable crops.

In the aggregate, both the area and yield has been slowly moving higher for vegetables. By 2000/01 the area for the covered vegetables was 184 471 dunums (18,447 hectares) and the yield was 31.6 tonnes per dunum, up from 178 357 dunums and 26.2 tonnes four seasons before. The entire area for 18 of the 36 vegetable crops considered here has full access to irrigation water and for another six crops the percent of the area irrigated is over 85. The irrigated area for the others ranges from over 75 percent for tomatoes and 65 percent for squash to 18 percent for pumpkins and down to 1 percent for garlic.

The main reason vegetable production has kept pace with population growth is the shift from open irrigation to covered facilities, and especially the plastic houses where irrigation efficiency and yields are much higher. For example, tomato yields during the 2001/02 season were 16 tonnes per dunum in the plastic houses, 4.7 tonnes under field irrigation and 0.8 tonnes under rainfed conditions. The greenhouse technology has expanded rapidly over the last twenty years. Nevertheless, by 2001/02 the plastic house area accounted for less than 15 percent of the vegetable area, with over 50 percent field irrigated, 27 percent rainfed, 7 percent surface tunnel and 0.3 percent trench tunnel. There therefore appears to be opportunity for further expansion of plastic houses, which would keep production expanding, as it must.

Although vegetable producers are having major problems in moving their products to market it does not appear that the closures have had a major impact on the production of vegetables except in the areas where the "separation barrier" is being constructed.

Fruit and Nuts

The trend in citrus fruit production is strongly downward, falling from 172 thousand tonnes for the 1996/97 marketing year to 105 thousand for the 2001/02 season. Most of the decline in production is due to the decrease in the bearing citrus tree area, from 5.8 thousand hectares to 4.0 thousand, but yields have declined also, to 26.2 tonnes for 2001/02, down from 27.6 tonnes four years earlier. All the main citrus fruits show a downward trend in production, with the sharpest drop for mandarins and the slowest decline for lemons. The reduction in per capita terms of course is even sharper, down from around 62 kg to 31 kg over the period considered.

Orchards have been destroyed and citrus producers have faced difficult marketing problems since September 2000, but it is obvious that producers were in some difficulty before then. All the citrus trees are irrigated and it

appears that the root of the problem lies with the availability and cost of irrigation water and the efficiency of open field irrigation.

The production of melons also exhibited a clear downward trend to the 2000/01 season, from a peak of 28.7 thousand tonnes to 12 thousand, but is reported to have risen slightly, to 12.9 thousand for 2001/02. The decline in area used to produce melons has been relatively greater than in production, as a modest increase in yields has been partially offsetting. Only 35 percent of the muskmelon and 43 percent of the watermelon were irrigated during the 2001/02 season so these food crops are also subject to the variation in rainfall patterns. During the 1997/98 season the per capita production was around 10 kg but had fallen to 3.7 and 3.8 kg for the 2000/01 and 2001/02 seasons.

The production trends for the other fruits differ, with increases over the six seasons for most of them and a near disaster for bananas. Banana production is reported to have declined from 21.9 thousand tonnes during 1996/97-1997/98 to 5.7 thousand tonnes by 2000/01-2001/02. Guava production has declined and strawberry production was down by 28 percent from 2000/01 to 2001/02, largely due to restrictions on movement. But substantial increases have been realized for grapes, apricots, aloe, plums, apples and pomegranate, while more modest increases are observed for figs, dates and most of the fruits of lesser importance. Growth in production of these fruits, after leaving bananas aside, has been well in excess of the growth in population, so per capita production, after falling from around 35 kg to a low of 28 kg per person during the 1998/99 season has risen to 44 kg during 2001/02. There are reports of those who lost their jobs returning to agriculture with time to take better care of these fruit trees.

Bananas, guava, mango, avocado and strawberries are fully irrigated crops, while almost all of the grape, fig, apricot, aloe, plum, pear and quince trees rely entirely on rainfall. In between are peaches, akadnia, dates and pomegranate, where 12 to 55 percent of the trees are irrigated. The total area used to produce these fruits has remained relatively stable, again with the exception of bananas, but yields have trended upwards.

For all the fruits together the available supply moved from an average during the 1996/97 and 1997/98 seasons of 122 kg per person to 107 kg for 1998/99 and to 90 kg for 1999/00, with net imports accounting for 6.9, 9.4, 13.3 and 7.7 kg over these four years. Per capita production was at 81.5 kg during 2001/02. But there is a world of difference between the path for citrus, melons and bananas and that for the rest of the fruits. The former have fallen from near 81 kg per person to 36 kg over the last five years, while the rest of the fruits have gone from 35 kg to a low of 28 kg and then up to 44 kg for 2001/02.

Around 5.9 thousand hectares are now used to produce almonds, the main nut crop. The area with bearing trees has been drifting downward, but yields appear to be moving upwards. Production during the last two seasons has been equivalent to about 1.4 kg per person, down from nearly 2.4 kg in 1996/97.

Cereals

Wheat is the only cereal produced primarily for food. Although a substantial quantity of barley is produced as well as small quantities of sorghum these cereals are grown almost entirely for animal feed, so here wheat is considered only from the food availability perspective.

Wheat relies almost entirely on rainfall for growth. Irrigated area during 2001/02 was equal to 2.1 percent of the total wheat area – and therefore is subject to major year-to-year variability in production. The years 1999/2000 and 2001/2002 were the high rainfall years and exceptional wheat harvests were the result, reaching 53 422 and 54 308 tonnes. In sharp contrast, only 11 052 tonnes were produced in 1998/1999. While the instability in production precludes any clear perception of the trend in wheat production, harvested area has risen. During the relatively good rainfall years of 1997/98, 1999/00 and 2001/02, the area increased from 20.9 thousand hectares to 21.7 thousand and then to 22.45 thousand, but the yield during 2001/02 was about 2 percent below 1999/00, which largely offset the increase in area. The instability in production is a major problem for the producers but it is of minor consequence to the consumers as they depend primarily in good years and bad on flour, rice, wheat and cereal preparation imports from commercial and food aid sources for this essential component of their diet. Wheat production over the last six years averaged 11.2 kg per person, while the flour and rice consumption requirements are considered to be 120 kg (150 kg wheat equivalent) and 15 kg per person per year. In the best year wheat production was equivalent to 17.1 kg per person and in the worst year it was at 3.7 kg. The average over the six years was equal to about 7.5 percent of the consumption requirement.

Over the four years from 1997 to 2000 the value of flour, wheat, rice and cereal preparation imports averaged

US$106.25 million, an amount equivalent to US$35.36 per person. At the prevailing producer price for wheat these years the quantity purchased with US$106.25 million would have been equivalent to 347 thousand tonnes of wheat, an amount equal to 117 kg per person. Wheat production these years averaged 11 kg per person, which would have brought the gross availability to 128 kg in wheat equivalent. The household survey data for 1996-98 indicated food cereal consumption at 105.3 kg per person, which when converted to wheat equivalent was on the order of 139 kg. The gap between the gross available supply of 128 kg per person and the consumption of 139 kg, or even the target of 150 kg, would have been narrowed by food aid, but the quantity distributed before September 2000 was not enough to close the gap.

The producer prices for wheat that are used to convert the value of imports into tonnes was 1.93 times the average world price during 1997-2000, apparently due to the tariffs applied on imports. (According to the retail price data for April 2003 a tonne of flour cost about US$350 a tonne (US$250 a tonne for wheat) and short grain rice was available at about US$605 a tonne. These prices were roughly twice those in the world market. At the world prices the supply in wheat equivalent would have been far above the consumption requirement (around 226 kg per person). Producer prices for 2000/01 were down from the previous year and since then cereal product prices at retail indicate that supplies have been sufficient to satisfy effective demand, with the price index for such products remaining below the all food price index. Cereals are the main component of the food aid packages, and the amounts distributed during the 2000/01 and 2001/02 seasons are estimated to have been equivalent to at least 24 kg and 29 kg per person these years.

Olives, Oilseeds and Oils

The West Bank landscape is dominated by olive trees. The olive tree area accounted for 55 percent of the total WBGS cultivated area in 2001/02. Area planted in olive trees was increasing to 1999/00, but even though additional trees have been planted since then at least in part to avoid confiscation of land the number destroyed or aged has exceeded new plantings. Around 4 percent of the olive tree area is non-bearing, and the yield from the bearing trees has ranged from a low of 408 kg to 1 738 kg per hectare in, respectively, 1998/99 and 1999/00. There are large year-to-year changes in production, due mainly to the cyclical nature of production but also to ample or inadequate rainfall, as only 3 percent of the area used to produce olives has access to water for irrigation. The share of production that is pressed also varies, tending to be highest in the good years, after table needs are satisfied. The percentage reported for 2001/02 (86.7 percent) is higher than ever before, and table supplies are low for a high production season, indicating that production may be understated. The oil extraction rate is relatively stable but a little higher when production is low.

Table VI.10: Olives: Area, Yield and Production of Olives and Olive Oil

Item	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Total area	837568	877059	893693	936426	921473	926312
Bearing tree area (dunums)	806015	841857	867043	900371	884748	888469
Non-bearing area (dunums)	31553	35202	26650	36055	36725	37843
Production (metric tonnes)	50694	98137	35347	156493	38463	143630
Kg per dunum	62.89	116.57	40.77	173.81	43.47	161.66
Olives pressed (metric tonnes)	24127	64213	15092	126149	22154	124564
Pressed/production (%)	47.59%	65.43%	42.70%	80.61%	57.60%	86.73%
Not pressed (metric tonnes)	26567	33924	20255	30344	16309	19066
Oil extracted (metric tonnes)	5961	14998	3436	27062	5443	27744
Extraction rate (%)	24.71%	23.36%	22.77%	21.45%	24.57%	22.27%
Oil availability per person (kg)	2.16	5.23	1.15	8.68	1.67	8.09

Source: PCBS. A dunum is equal to one-tenth of a hectare.

Although olives and olive oil totally dominate the oils and fats food group, small quantities of oilseeds (sesame, sunflower and safflower) are produced. The area used to produce oilseeds has been trending downward as has production. They are grown without the benefit of irrigation and therefore are subject to considerable year-to-year variability. In recent years the area used to produce oilseeds has declined to less than 500 hectares and during the last two years production has remained below 300 tonnes, a relatively insignificant amount. Sesame is the main oilseed, accounting for over 90 percent of the oilseed area.

The availability of olive oil averaged 4.5 kg per person over the six years, only 0.5 kg over the indicated level of consumption during 1996-98. Production was well below the consumption requirement in the "off" years and well above in the three relatively good years, especially in 1999/00 and 2001/02. In addition a substantial quantity of vegetable oil is consumed, reported to have averaged 5.88 kg per person during 1996-98, as well as a relatively small quantity of animal fat. The value of net imports of edible oils and fats averaged US$17.06 million during 1997-2000, which should have been enough to keep the availability of all edible oils and fats at or above the 11.1 kg per person average during 1996-98.

Imports apparently were large enough during 2001 to offset the sharp reduction in olive oil production and after the exceptional harvest and the record amount of olive oil produced during the 2001/02 campaign the supply of edible oil was more than adequate. Substantial quantities of vegetable oil are distributed under the food aid programs, equivalent to around 1.5 kg per person in 2001/02, and some of the excess olive oil was purchased for distribution.

Potatoes and Legumes

Potatoes are important to the Palestinian diet. Potato and sweet potato production averaged 19.3 kg per person over the last six years and has ranged from a high of 22.1 kg in 1997/98 to a low of 17.8 kg in 2000/01, a considerable variation even though nearly all of the potatoes are grown with the benefit of irrigation water. The area in 2001/02, at 2.2 thousand hectares, was a little larger than two seasons before but lower than four years before, while yields have remained relatively stable recently but higher then than they were during 1996/97-1997/98. Tuber production in 2001/02 therefore was equivalent to 19.45 kg per person, which appears to be sufficient.

The main legumes are chickpeas, lentils, dry broad beans and cowpeas. Of these dry cowpeas is the least important but it is the only one to have around one-third of the area under irrigation. Production is small relative to the consumption requirement and is extremely volatile, having ranged from 1 511 tonnes (1998/99) to 4 562 tonnes (2001/02) over the last six years. Production in 2001/02 was at 1.3 kg per person, down only slightly from the 1.4 kg during 1996/97 and 1997/98. The yield in 2001/02 was record high. The area used to produce legumes the last two seasons was up from the previous two but down from the earlier period. Pulses are distributed under the food aid programs.

Spices

The area used to produce spices is very small but has been trending upwards. Production and yields move up or down with the weather even though about two-thirds of the thyme area is irrigated and all of the chamomile area is irrigated. Thyme is by far the main spice both in terms of area and production.

Food Availability from Production

Although food production during 2000/01 and 2001/02, the first two full seasons after September 2000, was on average about 8 percent above the average for the previous two seasons, on a per capita basis it was 1.3 percent lower and 6.2 percent below the average for 1996/97-1997/98. In general, therefore, the implication is that food production was not increasing as fast as the population, and to maintain sufficient food supplies commercial imports and food aid had to increase.

Part of the decline in per capita production is due to the difference in weather patterns over the six marketing years. The weather patterns were quite adverse during the 1998/99 and 2000/01 seasons, and quite good for the 1999/00 and 2001/02 seasons, while during the first two years of the series they were not exceptional, good or bad, for plant production. And these two seasons together appear to have been better than the averages for the other years. While this explains part of the decline, there are reasons for concern.

Over the longer term the trends towards lower production of citrus, melon, banana and fish production are most pronounced although those for the relatively more minor products such as nuts, legumes and honey are notable. The cost of irrigating, the type of irrigation and the supply of water appear to be behind the steep downward trend in the production of citrus, melons and bananas as well as some other irrigated crops.

Fishermen have been facing difficulties before and after September 2000. The reversal of the previously strong upward trends in the production of eggs and the slower growth in poultry meat production are of particular concern. Producers who rely upon imported feed and other essential inputs have been seriously affected by the

restrictions on the movement of goods and the associated higher transport costs

The production of wheat, honey and oilseeds represents a small and declining share of the consumption requirement. Imports of wheat, flour, rice and cereal preparations, sugar and sugar products and vegetable oils, including those for distribution as food aid, apparently were sufficient to satisfy effective demand. Dairy product imports, earlier accounting for a large share of availability, declined sharply to 2000 but may have risen in 2001 and then retreated slightly in 2002, with food aid closing a small share of the gap between the consumption requirement and production. Fruit imports appear to be trending upwards while vegetable imports and exports offset one another as production fluctuates. Meat production growth continued to exceed population growth so imports account for a relatively small share of availability.

Table VI.11: Per Capita Food Availability from Production (Averages for 1996/97-1997/98, 1998/99-1999/00, 2000/01-2001/02, annual for 2000/01 and 2001/02, kg per year)

Food or Food Group	1996/97 - 1997/98	1998/99 - 1999/00	2000/01-2001/02	2000/01	2001/02
Cereals – Wheat	11.50	10.41	11.75	7.65	15.84
Meat	30.00	33.22	33.03	32.87	33.18
Fish	1.31	1.03	0.71	0.66	0.77
Milk	40.99	42.02	48.12	45.99	50.24
Eggs (1 egg = 60 gm)	10.29	10.77	10.11	11.09	9.12
Olives & Oilseeds	26.48	31.09	26.92	11.86	41.98
Citrus Fruits	59.29	43.68	34.35	37.95	30.75
Melons	9.95	5.36	3.71	3.67	3.76
Other Fruits	42.51	37.68	41.17	36.76	45.58
Nuts	2.08	1.28	1.38	1.34	1.42
Vegetables	170.35	168.70	168.88	166.75	171.00
Tubers	20.40	18.81	18.64	17.83	19.45
Legumes	1.40	0.90	1.06	0.78	1.33
Honey	0.22	0.08	0.10	0.11	0.09
Spices	0.44	0.70	0.59	0.51	0.67
Total kg per person	427.00	406.00	401.00	376.00	425.00

Source: Calculated from PCBS statistics

The overall conclusion based on the review of the available data on the quantity of food produced and imported between 1996/97 and 2001/02 is that production accounted for a slightly smaller share of per capita food availability and that commercial imports and food aid therefore accounted for a larger share. Food production was higher on average during the first two years after September 2000 than the averages for the preceding two seasons, but the increase was less than in population so food production on a per capita basis was down by 1.3 percent. Annex Tables 3 and 4 contain the details underlying the summary table on kg per person per year in total and for the food groups.

On a more mundane level it bears repeating that there are no firm estimates of food trade after 2000 and that the production data for 2001/02 only became available in October 2003, more than a year after the close of the marketing year. The official 2001/02 production estimates for olive and poultry meat production are substantially higher than the preliminary estimates.

Stability of Food Supplies

As indicated, food production varies significantly from one year to the next. This instability in food production is not fully offset by the subsequent changes in food trade and aid, so there remains considerable instability in food supplies. In recent years the value of food production has increased by 23.3 percent and 27.8 percent from one year to the next, and decreased by 19.8 percent and 18.1 percent from one year to the next. Most of the year-to-year variability is associated with plant products and stems largely from changes in the weather patterns and a large share of the change from year-to-year is associated with olive production.

Over the four years of great instability rainfall was quite adequate in two of them and quite inadequate in the other two. The high production years were 1997/98 and 1999/00 and the low ones 1998/99 and 2000/01, with

1998/99 the worst and 1999/00 the best. Using these two extreme years to illustrate the magnitude of the volatility it is noted that the value of olive and oilseed production in 1998/99 was at 20 percent of the prior year value and was 5.1 times the 1998/99 value in 1999/00. The figures for wheat were 34.5 percent and 3.8 times, for legumes 39 percent and 3.1 times and for spices 73 percent and 4.0 times. Potatoes were next, at 83 percent and 126 percent, followed by fruits and nuts, at 79 percent and 109 percent. Vegetables were the most stable, at 101 percent and 110 percent. The crops with extreme volatility relied entirely or nearly so on rainfall, while the less volatile ones had access to irrigation water. However, the supply of water for irrigation also is affected by the amount of rainfall received and so production for irrigated crops, especially with open field systems, also is subject to some change and because the values are much higher for vegetable and fruit production these changes account for a significant share of the total change in value.

The aggregate value of food production was US$203.8 million above the 1998/99 amount in 1999/00. Olives and oilseeds accounted for US$155 million of the change in value and the other plant products accounted for essentially all the rest as the value for all the animal products together remained essentially constant. Olives and oilseeds therefore accounted for 75 percent of the change in value, followed by about 10 percent for vegetables, 5 percent each for wheat and for fruits and nuts, with the rest accounted for by potatoes, legumes and spices.

Although a substantial part of the year-to-year changes in value is due to changes in producer prices the overall pattern is much the same when quantities are used. In fact they are a little more extreme because when production expands sharply the season average price normally tends to decline and visa versa. It is not easy to find a solution to the instability in production. The limited supply and high cost of water restrict the expansion of irrigated area and the cost can only be covered by relatively high value crops. Cereals, legumes and oilseeds are not high value crops. Production of these crops represents a relatively small share of the consumption requirement and so the solution to the instability for them is to ensure adequate imported stocks to cover shortfalls.

Distribution of Food Supplies

The distribution of food supplies has been affected, from the farm gate to the ultimate consumer. Although great detail with respect to food supplies has been discussed, and some serious problems facing the producers have been noted, the entire food system is being seriously affected by the disruptions to the transportation system that are associated with the closures. Checkpoints, blockades, the back-to-back system and destroyed roads have created logistical chaos and extreme transport cost increases. It has become impossible to move inputs to the producers or outputs to processors or to internal or external markets in a timely manner.

Based on the price index for transport and communications, the unit cost of transport was at least 42.2 percent above September 2000 in April 2003. Since the index includes communications the actual increase in the cost of transport alone was even higher. The increase in the cost of transportation affects not only the cost of moving goods but also adds to the cost of the inputs required to produce and process food.

According to PCBS, 535 establishments were wholesalers of raw agricultural products, 519 were processing or preserving olives, oilseeds, grain, meat, dairy products, fruits or vegetables and 21 were involved with the slaughtering of livestock or poultry in 2001. PCBS also reported that there were 1 868 food and beverage manufacturing enterprises in 2000. How many people and vehicles were involved in moving raw, processed or preserved products to retail establishments is unknown, but it seems evident that a significant share of the employed are associated with the food system and that a substantial share of the transportation system is involved in moving food from producers to consumers.

UNSCO reports that in 2002, movement restrictions were the most important factor blocking economic activity, followed by the back-to-back system of transporting goods, which significantly increases marketing costs. It also reports in some detail on the situation in Nablus, the second largest Palestinian city, where there are serious problems in the movement of goods into and out of the city, or even within the city, much like those in the Gaza Strip, where the significant decline in the number of truck loads of goods imported from Israel or the West Bank has been documented. Trucks taking goods from the Gaza Strip to Israel or the West Bank actually increased from 2000 to 2001 but then declined in 2002, to a six year low.

Trade in agricultural products between the West Bank and the Gaza Strip also has been adversely affected. From the 1999/00 to the 2000/01 marketing years there were especially sharp declines in the movement of vegetables, live animals and eggs from the Gaza Strip to the West Bank.

Table VI.12: Truck Flow in the Gaza Strip: Imports from Israel and the West Bank (Truck loads, monthly average, 2000-2002)

Year	Imported from Israel	Imported from West Bank	Total Imported	Index
2000	6 900	554	7 454	100.0
2001	5 519	551	6 070	81.4
2002	5 315	388	5 703	76.5

Truck Flow in the Gaza Strip: Exports to Israel and the West Bank (Truck loads, monthly average, 2000-2002)

Year	Exported from Israel	Exported from West Bank	Total Exported	Index
2000	436	525	961	100.0
2001	770	492	1262	131.3
2002	487	337	824	85.7

Source: UNSCO "The Impact of Closure and Other Mobility Restrictions on Palestinian Productive Activities, January 1 – December 31, 2002: A Summary

Another result of the changes imposed by the checkpoints, blockades and damaged roads in the West Bank has been a significant decrease in the number of person engaged in internal trade activities. The highest monthly decrease was reported by PCBS for April 2002. By then persons engaged in internal trade activities were 43 percent and 45 percent below the 1999 and 2000 levels. In April 2002, transportation, storage and communication activities were down by 38 percent and 32 percent from 1999 and 2000. Further, the World Bank quotes a report by PFI/Paltrade which reported that 32 percent of the firms engaged in food activities were facing financial stress by July 2002, with 11 percent in default and 21 percent slightly behind in payments.

The general trend regarding food marketing is that price integration within and between the West Bank and Gaza Strip has decreased due to the movement restrictions and marketing difficulties. For example, the Jordan Valley fruit and vegetables producing areas are only a few kilometres from Nablus but shipments have been drastically reduced because of closure. As a result, wholesaling activities have been severely downscaled. In some cases, like Hebron, the central wholesale market has ceased to function. This situation leads to instability in the markets and sharp local variations in food prices between localities.

The Food Supply/Demand Balance for 2002/2003

By the mid-point of the 2002/03 marketing year it seemed obvious that something quite different was taking place within the food sector. Food prices in April 2003 were 7.5 percent above the year earlier level. One and two years earlier the April to April comparison would have concluded that food prices were up less than one percent from the previous year (0.75 from April 2001 to April 2002 and 0.64 percent from April 2000 to April 2001). After two years of relative food price stability food prices moved up at a more rapid pace during the 2002/03 marketing year. The all food price index averaged 127.56 over the first eight months of the 2002/03 marketing year, compared with 122.06 for the first eight months of the previous marketing year. That is, food prices for the first eight months of the 2002/03 marketing year on average were 4.5 percent higher than the year before and by April-May 2003 they were 8.4 percent above April-May 2002. However, after peaking in April food prices declined through August before moving higher again in September. The average for the 2002/03 marketing year, the third year after September 2000, was 4.3 percent above the prior season and 6 percent above the average for the first year of the crisis (October 2000 to September 2001).

The 2002/03 price data provide evidence that there were supply shortages sufficient, even in a depressed food market, to place upward pressure on the prices for some food products. Although firm data on food production during the 2002/03 season is not available there are reasons to believe that food production was lower this season. Further, there was an impressive increase in employment and earnings reported for the fourth quarter of 2002, the first quarter of the current marketing year, so the market then was not as depressed as it was during the middle of 2002 when unemployment was considerably worse. But employment and earnings fell again during the first quarter of 2003 and food prices declined from May through August.

The surge in food prices took place in the areas hardest hit by the restrictions on the movement of goods and people, the Gaza Strip and the West Bank excluding Jerusalem. From December 2002 to April 2003 food prices

increased by 7.4 percent in the Gaza Strip and by 7.2 percent in the rest of the West Bank, but by only 1.7 percent in Jerusalem. A food price increase of over 7 percent in four months is exceptional, even if some of the increase was due to seasonal factors. This is cause for concern especially because the large increases were in the areas where earnings and incomes have been most seriously affected. Further, it is in the West Bank where the transportation cost increases have been most severe.

Poultry meat prices led the general increase in food prices, moving up sharply beginning in March and remaining abnormally high during the balance of the season. Vegetable prices moved up sharply in February and March but by the end of the year were well below the all food average. Fruit prices also jumped upward in April but then retreated. From April to September prices rose sharply for spices and modestly for fish, red meat, poultry meat and dairy products. Vegetable and fruit prices declined sharply and slightly for nuts, sugar and edible oils. For the season as a whole the increase in poultry meat prices was by far the largest. Prices for cereal products and sugar, the main imported foods, continued to indicate adequate supplies in a depressed market, perhaps in part due to larger food aid flows.

Food Aid

A number of organizations are involved in the provision of food assistance to the Palestinian people. UNRWA is second only to the Palestinian Authority as a source of food security related assistance to the refugees in the WBGS. WFP's food assistance activities increased sharply in 2001 and again in 2002 so it and the ICRC together with WFP's implementing partners has now become the major source of assistance to the non-refugees. It has an agreement with the ICRC, and its implementing partners are the MoSA and the CRS, PARC, CHF, as well as the hospitals in the Gaza Strip and social institutions in the West Bank. The MoSA distributes food as a substitute to welfare support both independently and as an implementing partner of WFP.

Table VI.13: Food Aid provided in 2002 (tonnes)

Food Product	WFP (tonnes)	UNRWA West Bank (tonnes)	UNRWA Gaza Strip (tonnes)	Other Bodies (tonnes)	Total Food Aid Provided in 2002 (tonnes)
Flour	24946	14502	41785	7268	88501
Rice	6188	2778	5924	1332	16222
Sugar	644	2778	5605	808	9835
Edible oils	1669	1254	1826	426	5175
Pulses	611	165	3554	387	4717
Whole milk	0	1597	743	209	2549
Fish	0	352	124	0	476
High Energy Biscuits	18	0	0	0	18
Canned meat	8	0	0	0	8
Total tonnes	33883	23744	59569	23453	127501

Sources: WFP, UNRWA, own estimates

Food aid also comes in through a number of other channels both formal and informal, and includes contributions by the Islamic social welfare organizations, charity groups and international NGOs. The estimated quantities of food aid delivered by all the organizations in 2002 in the above table is based on detailed information provided by UNRWA, both Gaza Strip and West Bank offices, and WFP together with a rough estimate of the amount from the other food aid interests. The International Crisis Group estimates that one-sixth of the food aid comes from organizations other than those affiliated with WFP or UNRWA. Others conclude that the sources other than UNRWA and WFP provide around 8 percent of the food aid, which would mean a total of around 127 000 tonnes were distributed in 2002. The FAO/WFP's assessment and review of the limited available information leads us to believe that the one-sixth estimate may be an overestimate, and therefore conclude that at least 127 500 tonnes of food was distributed in 2002.

The food aid programmes have expanded very rapidly since September 2000, when the quantity being delivered was on the order of 20 percent of the 2002 amount. There was a sharp increase in the quantity delivered in 2001 and another significant expansion appears to be taking place in 2003 but the magnitude of the total amount to be distributed in 2003 depended on the response to the food aid appeals that had been made. The total tonnage

delivered in 2003 is expected to be 140 000 and 150 000 tonnes. Food aid now accounts for a significant share of the total consumption requirement for flour, rice, sugar, edible oil and pulses.

Food Production, Trade and Aid Prospects for 2002/03

MoA officials have prepared estimates of the consumption requirement for 2003 for some of the main food products, and the anticipated or expected production for the 2002/03 marketing year. The MoA consumption requirements or sufficient supply amounts were calculated by multiplying the target per person quantity for each main food group by the projected population at mid-2003. (In the following the consumption requirements have been adjusted to the marketing year, using the projected 1 April 2003 population.) The "expected" production estimate was then subtracted from the consumption requirement to obtain a measure of the gap between them which would have to be filled by imports. The expected production numbers are informed judgements. They were prepared late in 2002 and therefore are not based on actual production data nor are they based on field surveys. Instead, they are the judgements of the officers in the governorates and statistical offices. In some cases the geographic area covered does not appear to be complete. These data therefore must be used with caution. They will be revised when there are firm estimates of actual production, but noting that the final estimates for the 2001/02 marketing year that ended with 30 September 2002 did not become available until October 2003 it will be some time before it is known how much, in fact, was produced during the 2002/03 season. The estimates of production and trade are presented in detail in Annex Tables 3 and 4. The import figures for 2002/03 are simply the quantities that would have been required to close the gap between the assumed consumption requirements and the estimates of expected production. The retail price data for the 2002/03 season indicate that the production of fruits, vegetables and other plant products were higher than the expected estimates in the annex table on food availability.

Milk

The consumption requirement for milk was placed at 60 kg per person, which appears to be a realistic expectation based on previous consumption, but may exceed demand under current circumstances. At 60 kg the available supply should have been 216 000 tonnes for the 2002/03 marketing year but production was expected to be only 115 395 tonnes, a considerable reduction (-33 percent) from 2001/02 and even 23 percent below production for 2000/01. On a per capita basis production would be only 32 kg, down from 50 kg during the 2001/02 season. Over 100 thousand tonnes would have had to be imported to close the production gap and with only around 3 thousand tonnes obtained from the food aid agencies this would leave an exceptionally large commercial import requirement of 97 thousand tonnes.

There is the realization that the crisis has made it more difficult to ensure the health of animals, to improve productivity by purchasing higher quality animals and more costly to obtain feedstuffs for milk animals as well as to move the milk to markets for processing or consumption. The processing centres have also been affected by the crisis. These difficulties can be expected to slow the growth in milk production, but the projected decline was much larger than the price data suggest. Retail prices increased only modestly during the 2002/03 season, so either the expected production number is far too low or the market for milk and dairy products is far more depressed than has been indicated so far. Most likely far more milk was produced than expected. The vulnerability assessment findings tell us that consumers have reduced the consumption of dairy products, but it is extremely unlikely that the reduction was as great as indicated.

Eggs

The consumption requirement was placed at 150 eggs per person and expected production at 185 eggs, leaving an excess supply of 35 eggs per person. These numbers do not appear to be in accord with reality either. Production for 2001/02 was reported to be 161 eggs per person, down from 185 and 194 per person the prior two years. In the severe cost/price squeeze confronting producers an increase from 161 eggs last year to 185 eggs this year is questionable, even if production last season was higher than reported.

The consumption requirement of 150 eggs per person for 2003 is well below the reported number for any previous year for which data are available. There is no evidence that suggests consumption has fallen below 180 eggs per person. Turning to retail prices as a guide to the supply/demand balance for 2002/03 it was found that by April 2003 the price index for eggs was at 100.8, that it dropped to 95.7 by July, but by September was at 103.6 which means that the egg price was only slightly above the price in 1996. Although egg prices were slightly higher during 2002/03 they indicate that supplies were quite adequate. So how many eggs are being produced or consumed remains uncertain, but whatever they are they appear to be enough to satisfy effective

demand.

Meat

The consumption requirement of 11 kg per person for red meat aggregates to 39 585 tonnes and production was expected to be 21 884 tonnes, a shortfall of 17,701 tonnes and well below the 30 599 tonnes reported to have been produced in 2001/02. It is difficult to believe that red meat production would fall to under 22 thousand tonnes during 2002/03 unless production was seriously overstated for 2001/02. Further, 17.7 thousand tonnes is well above the amount imported in any prior year. Red meat prices rose modestly during 2002/03 but not by enough to indicate a serious supply problem. They do not indicate a supply shortfall anywhere near the magnitude these data suggest even though there have been unconfirmed reports of a larger quantity of red meat coming in from Israel and during the household surveys the respondents report a shift away from high priced meat towards cheaper plant products.

The consumption requirement for white (poultry) meat, at 21 kg per person, was calculated to be 75 571 tonnes, while production was expected to be 72 223 tonnes, leaving a gap of 3 348 tonnes. Production was reported to be 83 147 tonnes during 2001/02 and 81 413 tonnes during 2000/01, sufficient to supply each person with 24.3 kg and 24.9 kg for these years. These data suggest the consumption requirement for poultry meat is well above 21 kg per person and the retail price data suggest that the shortfall was well above the estimated 3 348 tonnes. If the consumption requirement for the 2002/03 season was 24 kg per person the gap between production and the consumption requirement would have been 14 144 tonnes, an amount more consistent with the 30 percent increase in the retail price from January to September. Given the situation facing producers and the high retail prices during the 2002/03 season it is understandable and evident that there was a very tight supply situation.

Poultry meat prices rose 14.6 percent from February to March, by another 9.4 percent from March to April and another 2.2 percent in May. By May they were 23 percent above the price for red meat, when they normally are below. Prices eased a little during the summer by ended the season slightly above the May level. Poultry meat prices increased from January 2003 to September 2003 by 30 percent. Although red meat supplies did not appear to be anywhere near as tight as the above estimates would indicate, and clearly less tight than for poultry meat, there are serious supply problems with respect to meat. It seems obvious from the moves in poultry prices that meat imports have not been able to close the gap between supply and effective demand so far. Higher prices should stimulate an increase in white meat production, but until the constraints on caring for animals and on moving feedstuffs and other essential inputs in a timely manner are removed those who rely heavily upon imported feeds and medicines to produce meat may find it difficult to do so.

Fish

The fish consumption requirement was placed at 3.2 kg per person for 2002/03, which would require 9 thousand tonnes of imports to go along with the 2.5 thousand tonnes expected to be produced. Since the latest estimate of availability is one-third of the indicated requirement, and the most that has ever been imported is a little over 2 thousand tonnes, these estimates also must be questioned. As previously indicated fishermen are in an extremely difficult situation. Some fish is being provided under the UNWRA food assistance programs, but does not come close to closing the indicated gap. Fish prices remain high, both at the producer and consumer levels, but declined during the first half of the marketing year and rose only modestly during the last half. By September 2003 they were 5 percent above the April level and very high relative to other foods. Per capita consumption is likely to remain near 1 kg per person; it cannot be expected to come close to 3.2 kg in the near future.

Sweeteners

The annual consumption requirements for sugar and honey were placed at 29.5 kg and 0.4 kg per person, which aggregates to 106 200 tonnes of sugar and 1 439 tonnes of honey for the marketing year. To meet this requirement 106 thousand tonnes of sugar would have to be imported, which would be a record amount. A relatively large quantity of sugar is being provided under the food aid programs. Nevertheless, the food aid amount is unlikely to be more than 10-12 percent of the total requirement, so commercial imports must have increased again this year. Honey production was reported to have rebounded from the recent lows of around 350 tonnes to 601 tonnes, back to where it was five years ago. Even so, around 840 tonnes would have had to be imported to meet the 2002/03 consumption requirement.

Although there is some uncertainty over the actual level of sugar consumption, placing the requirement at 29.5 kg per person seems reasonable although it may be a little high, recalling that 22.8 kg per person was reported to have been consumed during 1996-98. But whatever the actual consumption the commercial and food aid importers appear to be on top of the market and are able to keep availability at the desired level. The retail price of sugar showed some volatility during the season, but ended the marketing year below the average for the year and at only 7 percent above the 1996 price. Supplies appear to be quite adequate.

Vegetables

As previously noted, the consumption requirement for vegetables appears to be around 170 kg per person, as when production falls below this level there are net imports and when it rises above there are net exports. The weather patterns during 2001/02 were quite favourable to vegetable production and a record quantity was produced. The expectation for 2002/03 was that less favourable weather patterns and closure related constraints would cut production for the main vegetable crops by about 10 percent even though the production of tomatoes, onions and several other crops was expected to be higher. These increases were expected to be more than offset by expected declines for eggplant, cucumber, squash and many other vegetable crops. While a reduction in production was highly likely, a 10 percent reduction would be exceptional given the largest previous decline from one year to the next of a little less than 5 percent.

In any event, even a small reduction in production would have meant a return to a net importer position for vegetables. Retail prices during February-April signalled inadequate supplies but by the end of the season they were indicating ample supplies, having declined from March to September by 24 percent. Production must have exceeded expectations even though expenditures for vegetables were being cut by consumers.

Fruits and Nuts

Fruit production was expected to decline quite sharply in 2002/03, due to less favourable weather patterns, irrigation water related problems and the crisis. Citrus production was expected to continue the downward trend of recent years, with the slope even steeper, by 24 percent. Declines were expected in the production of every citrus crop, with an exceptional decline foreseen for lemons (down 27 percent), at least in part the consequence of the serious marketing problems producers continue to face. In contrast, melon production was expected to go against the trend and increase by 32 percent and banana production was expected to remain between the reduced levels of the last two seasons. Strawberry production was expected to decline again, to a level well below any of the previous six years. A reduction from the exceptional outturn of last season was expected for grapes (down 15 percent) and also for several other fruits. Nevertheless, production for the fruits other than citrus and melons was expected to be higher than in any year prior to the last one.

Fruit prices have not been sending a clear signal about the supply/demand balance for the current season. They were about 10 percent above the all food index by December and then declined to March so that they were below the all food price index and then jumped up by 17 percent from March to April to a level that was 9 percent above that for all food, and then declined again, so by the end of the season they were 12 percent below the April level. That is, they have moved from indicating a relatively tight supply last fall to a rather adequate supply during the winter, then tight supplies again in April and adequate supplies by the end of the season. The price pattern does not conform to the expectations of a large decline in production for the season. Nevertheless, the long-term decline in citrus, banana and strawberry production is cause for concern.

The production of nuts was expected to decline, falling back to the level of two seasons ago. On a per capita basis the available supply from production would be down to about 1.2 kg per person. Nut prices during the 2002/03 season were relatively stable, indicating a relatively reasonable supply.

Cereals

The consumption requirement for flour was placed at 120 kg per person per year, deemed to be equivalent to 150 kg per person of wheat, and for rice was placed at 15 kg per person per year. This is a substantially larger amount than indicated by the above import data for 1996 through 2000, but the fact is that the actual quantity of cereals imported for human consumption is unknown. Wheat production was expected to be 42.7 thousand tonnes, equal to 11.87 kg per person. After allowing for non-food uses the gap between the available domestic supply and the consumption requirement was in the order of 140 kg per person for wheat and wheat products alone. The amount of flour distributed to recipients by the food aid bodies in 2002 was estimated to have been equivalent to about 26 kg for every member of the population, equivalent to 22 percent of the flour consumption

requirement. The food aid programs are expanding again in 2003 so it is likely that those involved in the provision of food aid could deliver the equivalent of around 30 kg of flour during the 2002/03 season. In wheat equivalent this would be around 42 kg per person, leaving a little less than 100 kg to come from commercial sources. Total imports of wheat and wheat flour would be in the order of 500,000 tonnes.

The rice consumption requirement is filled entirely by commercial importers and the food aid bodies. UNRWA and WFP together provided an amount equivalent to 4.3 kg per member of the total population in 2002. In total the amount distributed may have been the equivalent of 4.7 kg per person. It is expected to be lower during the 2002/03 season as WFP left rice out of its latest appeal. So for the marketing year the commercial import requirement is expected to be in excess of 10 kg per person. To reach the consumption target 54 000 tonnes would have to be imported.

Converting these estimates to tonnes of wheat and rice and assuming that stocks, held entirely by commercial firms and food aid agencies, are equivalent to the consumption requirement for about one month, the following supply/demand perspective for 2002/03 is reached.

Table VI.14: West Bank andGaza Strip: Cereal Balance Sheet October 2002-September 2003

Availability	Thousand tonnes
Opening stocks	68 000
Domestic production	42 700
Wheat/flour imports	503 000
Of which food aid	(161 000)
Rice imports	54 000
Of which food aid	(18 000)
Utilization	
Seed, other uses, waste	5 700
Ending stocks	68 000
Food use	594 000

Source: MoA and own estimates

About 37 000 tonnes of the 42 700 tonnes of produced wheat is assumed to be available for consumption, with the rest used for seed and other non-food uses or wasted. With the consumption requirement at 540 000 tonnes (wheat equivalent), wheat and flour imports are therefore placed at 503 000 tonnes. Most of this will be imported as flour instead of wheat. The food aid agencies are expected to import around 144 000 tonnes, leaving 359 000 to be brought in by commercial firms. The assumption is that all of the barley, the other main cereal produced in the area, will be used as animal feed. The 54 000 tonne rice consumption requirement will be supplied entirely from external sources, with an estimated 18 000 tonnes brought in by the food aid agencies and 36 000 by commercial firms. The net commercial import requirement for cereals of 395 000 is a large amount, but not above the amount imported in 1999.

Looking further into the future, the most likely scenario is for wheat production to provide an even smaller share of the consumption requirement than has been the case in recent years. The wheat yield compares well with Israel or Jordan, as over the last six years it has averaged 1 689 kg per hectare compared with 1 572 kg for Jordan and 1 599 kg for Israel. The area used to produce wheat of course is higher in good weather years, and for those years (1997/98, 1999/00 and 2001/02) the trend has been towards a slightly larger area devoted to wheat. Yet, wheat production as a share of the total consumption requirement tends to gradually drift lower. The instability in production that arises from favorable and unfavorable weather patterns is unlikely to change as wheat is a low value crop compared to those that capture the limited supply of irrigated water.

Table VI.15: Wheat Area, Yield and Production

Years	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
Wheat area (dunums)	186868	209436	142072	216672	206094	224475	21500
Wheat production (tonnes)	28310	36523	11052	53422	24983	54361	42721
Yield (kg per hectare)	1515	1744	778	2466	1212	2419	1987
Per capita production (kg)	10.27	12.73	3.70	17.13	7.65	15.84	11.87

Source: PCBS through 2001/02, MoA expected for 2002/03

Retail prices for cereals and products remained essentially stable during the 2002/03 year, indicating supplies were adequate.

Oils and Fats

In good years the production of olive oil is well above the consumption requirement, but not during the "off" years. If the 4 kg per person per year reported for 1996-98 is taken as the desired level, then there were significant shortfalls in 1996/97, 1998/99 and 2000/01, and large excess supplies in 1999/00 and 2001/02. The impact of the dramatic changes in production is felt mainly in the subsequent year, as the olives are picked late in the marketing year.

The exceptional harvest in 2001/02 continued to influence the prices of oils and fats well into the 2002/03 marketing year. The price index for oils and fats remained well below the all food index throughout the 2002/03 marketing year. An abnormally large supply of olive oil remained in the hands of producers due to transport and marketing problems early in 2003. According to a PARC report published in February 2003, there was approximately 20 000 tonnes of olive oil in farmers' storerooms. The large supply remaining to be sold was confirmed by several farm visits, where farm leaders reported in April 2003 that 95 percent of the olive oil in the area near Nablus was still stored due to marketing constraints and low prices.

Turning now to the 2002/03 marketing year, at 4 kg per person per year the domestic requirement for olive oil would have been 14.4 thousand tonnes. Olive production is expected to be down from the exceptional amount produced in 2001/02, but at 120 000 tonnes by much less than has been the case after an exceptional year. Olive oil production in 2001/02 reached 27 744 tonnes, which was far in excess of the consumption requirement, and given marketing problems the available supply was large enough to drive the olive oil price down sharply. If production reached the expected production level in 2002/03, olive oil production would have been around 22 000 tonnes, an amount well above the consumption requirement for an unprecedented second year in a row, leaving a large supply for export or stocks or food aid.

The consumption requirement for olive and vegetable oils appears to be around 11 kg per person or about 40 000 tonnes for the 2002/03 marketing year. Oilseed production, although only a tiny share of the edible oil market, was expected to be higher in 2002/03 than in the prior year, led by a sharp anticipated increase in sesame production. During 2002 the food aid bodies distributed around 5 000 tonnes of vegetable oil and nearly 84 tonnes of olive oil, an amount equivalent to 1.4 kg per member of the entire population. Assuming the food aid bodies provide 1.6 to 1.7 kg per person for the 2002/03 marketing year and also that the excess supply of olive oil leads to the consumption of 5 kg per person would reduce the commercial import requirement to 4.4 kg per person. Olive oil is being purchased for the food aid programmes by UNRWA and WFP. The 40 000 tonne consumption requirement could be satisfied by some 6 000 tonnes in food aid, 18 000 tonnes of olive oil and 16 000 tonnes of imported vegetable oil.

Potatoes and Legumes

Potato production was expected to be slightly higher in 2002/03, but not by enough to maintain per capita availability at the prior season level. The production of legumes was expected to be slightly above the relatively good crops of last season when weather patterns were favourable. Then, according to the preliminary estimates, production was sufficient to provide 1.33 kg per person about the same as the quantity of pulses provided by the food aid agencies. UNRWA and WFP distributed 4 330 tonnes of pulses and they together with the others could provide 5 500 tonnes in 2002/03, an amount above the entire expected production of legumes.

ANALYSIS OF THE AGRICULTURAL SECTOR AND ITS POTENTIAL CONTRIBUTION TO FOOD AVAILABILITY

The Structure of Agriculture

In much of the West Bank, family farms dominate, especially in the western hills, with 90 percent of holdings below five hectares. In the Jordan Valley, land holdings are relatively large, with absentee owners living in Jordan. In the Gaza Strip, a few large farms run by absentee owners cover half of the area, with the remainder worked as family farms. In the West Bank, most Palestinian farmers live in the western hilly areas where agricultural production potential is only modest, cultivating rain fed tree crops, field crops, and livestock. The least populated areas, notably in the Jordan Valley, have the most agricultural potential. Agriculture is

constrained by small sized land holdings, especially in the Gaza Strip, with 90 percent of farms being 0.5 and 5 hectares. According to ARIJ, one-third of all holdings in the West Bank are owned, 36 percent are shared, 27 percent are rented, and 7 percent are a combination of these ownership patterns.

Employment in Agriculture

According to PCBS, employment in the agriculture, hunting, forestry and fishing sector in the WBGS fell from 71 000 in 2000 to 56 000 in 2001 but then climbed back to 68 000 for 2002. Further, fourth quarter 2002 employment was reported to be 90 000, well above the average for 2002 and significantly higher than the 57 000 reported for the fourth quarter of 2001. But the report for the first quarter of 2003 suggests that most of the fourth quarter increase was seasonal and largely due to the very large olive harvest, as agricultural employment in the West Bank dropped sharply. However, it increased in the Gaza Strip. Therefore, the increase in employment in the sector appears to be at least partially the consequence of the extremely weak job market in the non-farm economy. Agricultural employment in Israel and the settlements during the last quarter of 2002 was reported to be 5 000, the same as a year earlier and down sharply from the 11 000 average for 1999 and 2000.

At 90 000 employees during the fourth quarter of 2002 the agriculture sector accounted for 18.6 percent of employment in the WBGS, compared with only 12.7 percent a year earlier, and, including those working in Israel and the settlements, for 17.6 percent of total employment, but this percentage fell back to 14.7 percent for the first quarter of 2003. During the fourth quarter of 2000 the agriculture's share in total employment was at 16.9 percent, which indicates that agriculture's share of total employment rises and falls with good or poor harvests. Nevertheless, the share working in agriculture was higher in 2002 than in 2000, 14.8 percent compared with 13.7 percent, and both these years were high production ones.

The opinion polls by the Birzeit University Development Studies Program indicated that there had been a large increase in the population involved in domestic farming and raising livestock from February 2001 to February 2002 and to November 2002, from 16.8 percent to 26.8 percent and then to 32.6 percent for the West Bank and Gaza Strip. The reported increases were substantial in both the West Bank and in the Gaza Strip, from 21.5 percent to 34.5 and 38.4 percent for the former and from 8.9 percent to 15.0 and 22.9 percent for the Gaza Strip. Families were resorting to agriculture in order to cope with the current economic situation. It appeared that many of the newly unemployed had resorted to this sector for food and income. Some had, but apparently not as many as indicated by these data. UNSCO also reports that the agricultural sector has grown in importance as a coping mechanism throughout the crisis and so do the household surveys. Nevertheless, the magnitude of the harvest appears to be the bigger influence in agricultural employment.

Agricultural Earnings and Wages

Wages in agriculture are and have been lower than in any other sector of the economy. They are lowest in the Gaza Strip and the gap between agriculture and for all workers is also greater in the Gaza Strip. Further, wages paid to females in agriculture are significantly lower than those paid to males, everywhere. UNSCO, after adjusting the PCBS nominal figures to real rates, concludes that the agriculture wage was 84 percent of the wage for all employees in the West Bank and at 65 percent in the Gaza Strip in 2000, and that by 2002 the gaps had increased to 71 percent and 54 percent. The average wage for all workers in the West Bank had declined in real terms by 4.6 percent but had increased in the Gaza Strip by 2.8 percent. In the meantime the real wage for agriculture workers had fallen by 19 percent in the West Bank and by 14 percent in the Gaza Strip. UNSCO concludes that in general most of the adjustment to closures and curfews has taken place in job loss rather than wage loss. As seen, agriculture is the exception, where the average wage has declined sharply.

Area used to Produce Plant Products

The area used to produce plant products ranged from 161 200 (1998/99) to 186 138 (1997/98) hectares over the seven years ending with 2000/2001. It was at 185 107 hectares in 2001/02. Over 90 percent of the area is used to produce food crops. The area used to produce olives dominates the area statistics, accounting for nearly one-half of the total area in a high production year. In such years wheat is harvested from about 12 percent of the area and fruits and vegetables each account for about 10 percent. About 9 percent of the area is used to produce non-food crops, mainly barley, sorghum, clover and other feed crops for animals but also some tobacco. The remaining area is used mainly to produce nuts, legumes, tubers and spices. A small area is devoted to the production of cut flowers.

Table VI.16: Area Used to Produce Plant Products in the West Bank and Gaza Strip, 1994/1995 - 2000/2001

Variable	1995/ 1996	1996/ 1997	1997/ 1998	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002
Total Cultivated Area	1829880	1834658	1861380	1612013	1836761	1815547	1851070
Area of Fruit Trees	1118075	1137326	1148405	1124015	1192630	1174458	1181239
Area of Vegetables	190984	185812	181984	158401	173862	173417	174016
Area of Field Crops	520110	510568	530276	328882	469682	467122	495297
Area of Cut Flowers	711	952	715	715	587	550	518

Source: PCBS. Area in dunums. (A dunum is equal to one-tenth of a hectare.)

Most of the year-to-year variation in area is due to differences in the weather pattern during the growing season. When rainfall is adequate the area harvested is significantly higher than when it is inadequate, as was the situation in 1998/99 when the area harvested was 13 percent below the prior year. Rainfall was much more adequate the next year, and the area increased by 13.9 percent. The weather patterns were less favourable to production in 2000/01, but better than in 1998/99, and they were quite favourable to production in 2001/02.

Only about 23 900 hectares are irrigated or protected, which in 2001/02 was equivalent to 12.9 percent of the land used to produce plant products. The area with access to water for irrigation is used mainly for vegetables and other high value products such as citrus, bananas and strawberries. The irrigated share for each main food product in 2001/02 is shown on Annex Table 4. As can be seen, the percentage is at or near 100 for citrus trees and a few other fruit trees as well as a large number of the vegetable crops and potatoes. But many food products are dependent entirely or nearly so on rainfall, including olives, oilseeds, food cereals, almonds, plums, aloe, apricots, figs and grapes. The cereals and forages produced for animal feeds, not shown on the table, are almost entirely rainfed.

An indication of recent trends in area for the various food products also can be seen in Annex Table 4, which shows the cultivated area for the last three relatively favourable weather years, 1997/98, 1999/00 and 2001/02. The largest declines in area are for citrus, melons, bananas and almonds. The area used to produce animal feeds was higher in 1997/98 than in the other two relatively favourable years, but lower in 1999/00 than in 2001/02. The area used to produce cut flowers reached 952 dunums during the 1996/1997 season but declined subsequently. Only 10 percent of the total cultivated area is in the Gaza Strip, but because a much higher proportion is irrigated the contribution to the total value of production is around 30 percent.

Livestock Numbers

From 1994/95 to 2001/02 the number of livestock is reported to have increased substantially. The slaughtered cattle, sheep and goat numbers, however, show increases from 1998 to 2000 for cattle, decreases for sheep and about the same for goats, followed by sharp reductions for all three categories in 2001. And the milk and meat production data for these years show increases through the 2001/02 season. These inconsistencies remain to be resolved.

For the 2001/02 season the official estimates indicated a decrease in the number of layers, to 2 171 thousand, but further exceptional increases for the other animals, as shown below. Most of the sheep and goats as well as most of the other animals are in the West Bank. The preliminary estimates for 2001/02 had the Gaza Strip accounting for 24 percent of the broilers, 37 percent of the layers, 3.5 percent of the goats, 5 percent of the sheep, 31 percent of the cattle and 31 percent of the beehives.

Table VI.17: Animal Numbers in the West Bank and Gaza Strip, 1996/97 to 2001/2002

Livestock Numbers	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002
Number of Cattle	20976	22050	23858	23688	26601	30105
Number of Sheep	504903	537998	504078	566409	615838	758293
Number of Goat	267101	252258	295033	308845	313583	355387
Number of Broiler (Thousand birds)	35505	38550	48418	43457	47890	48909
Number of Layer (Thousand birds)	1976	2061	2059	2518	2518	2171
Number of Beehives	47625	57850	46195	46020	46585	47900

Source: PCBS

Efforts to rid the livestock sector of important animal diseases have been subjected to a crippling blow. The restrictions since September 2000 disrupted vaccination programs and prevented disease monitoring, which made it difficult to control animal diseases, many of which are dangerous to human health. These and other problems have led to significant losses in productivity, output and assets.

There was a confirmed case of foot and mouth disease (FMD) in December 2001 and a second in May of 2002. In addition, Brucellosis is becoming a significant problem, with increased cases of human Brucellosis. In 1999, a mass Brucellosis vaccination was undertaken, with 900 000 animals vaccinated, including all of the sheep and goats in the West Bank and Gaza Strip. In 2001, due to closure and extended curfews, only 225 000 animals were vaccinated. The number of animals vaccinated increased considerably namely to 400 000 in 2002 and the same number of animals in 2003. However, due to non-vaccinated animals, rates of animal abortions and human infections are increasing. The most serious threat to human health resulting from this situation relates to BSE. Israel had a confirmed case in a ten year-old cow in May 2002. The Government of Israel made the decision to require the slaughter of all cows over thirty months under controlled circumstances. Veterinarians oversee slaughter, require the tracking of all meat and restrictions on marketing for consumption until the brain of each animal is tested. If the test is negative, the meat is released.

The new Israeli policy meant that during the past year, Israeli farmers were obliged to eliminate 100 000 animals, creating price incentives for illicit cross-border trade with the West Bank and Gaza Strip. At the same time, the Palestinian Authority's MoA has no border control and no inspectors in slaughterhouses, no testing facilities and must send brain tissue from any suspect animals to Israel. While MoA has refused officially to receive any of the thirty-month or older animals from Israel, it has no way to control illicit imports. Even if it could have veterinarian oversight at slaughterhouses, it does not have any means of holding fresh meat during testing, or conducting tests, tasks which Israel has requested they take over. This creates a potentially dangerous situation, both for the West Bank and Gaza Strip, as well as for Israel.

Officials from the Palestinian Authority's Ministry of Health, Ministry of Agriculture and Ministry of Supply and municipality governments have a role in controlling meat safety, and continue to operate in cities and towns when they can do so. But routine visits to farms, organized testing for BSE, and vaccination programs are in serious difficulty.

Among the other problems animal product producers face is access to feed on a timely basis, particularly those engaged in the production of poultry meat and eggs, which has serious implications for productivity as delays in the timely arrival of feedstuffs cause large losses. Other problems facing the sector include some instances of the destruction of farm machinery and other assets, or even the killing of livestock and the poisoning of pastureland by settlers. Also, productivity increases are difficult given restriction on purchases of breeding stock. All animals must be purchased from Israel, and travelling to Israel to choose livestock is impossible for most livestock owners. In effect, orders are made and shipments sent without farmer inspection, making it difficult to obtain high quality breeding stock. In dairy in particular, most animals imported are culls with problems concerning fertility, disease, or mastitis, making increasing productivity in the sector problematic.

Value of Agricultural Production

The value of production data presented here includes field crops grown primarily or entirely for animal feeds. A more precise view of the value of production for the food products is found above. When measured on a per capita basis, the value of agriculture production ranged from US$245.48 in 2000/01 to US$332.40 in 1997/98. The value of production per person was the highest in 1997/98 even though the total value of production was higher in 1999/2000. The value of production was exceptional in 1997/1998 and in 1999/2000, due mainly to outstanding olive harvests. The value of production in 2001/2002 is reported to have increased by 6.8 percent, while the increase in production was on the order of 19 percent due mainly to lower producer prices, a consequence of limited economic access to food. (However, the value may be based on the lower preliminary estimates of olive and poultry meat production and therefore understated.) While import data is unavailable for 2001 it is highly unlikely that the reduction in the value of production from 1999/2000 to 2000/2001 could have been covered by imports, but in the depressed market they apparently were sufficient to fully satisfy the depressed demand, as food prices declined slightly in 2000/01 from the prior year level.

Table VI.18: Value of Production, 1996/1997 to 2001/2002 (000 US$)

Values	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002
Value of Agricultural Production	786510	953617	760639	979817	801601	855844
Value of Plant Production	475954	611248	408166	629334	431072	506938
Value of Fruit Trees	191264	335570	155077	319884	159236	200725
Value of Vegetables	216177	212062	214401	235747	219012	231997
Value of Field Crops	60660	56140	32729	69385	48903	70818
Value of Cut Flowers	7853	7476	5959	4318	3921	3398
Value of Livestock Production	310556	342369	352473	350483	370529	348906
Total Value Per Capita	$285.42	$332.40	$254.40	$314.15	$245.48	$249.66

Source: PCBS.

The overall performance of the agricultural sector in 2002/2003 was expected to be less impressive than in the prior year due to the disruptions caused by external and internal closures, the expectation that the weather patterns will not be as favourable to plant production and the small but nevertheless important loss of land, diminished access to land and lack of water for agricultural purposes associated with the construction of the separation barrier. Agriculture makes a major contribution to total food supply, but as shown, the WBGS are not self-sufficient in hardly any food groups, relying to a large degree on commercial imports and increasingly on food aid. The major changes in the sector over the last decade have been a slight increase in food self-sufficiency in meat and dairy products, a significant increase in the production of high-value horticultural products, and a notable surplus of olive oil in the good years.

Agriculture in the WBGS has traditionally been the domain of a dynamic and entrepreneurial private sector. However, the system of closure and separation has caused widespread economic deterioration. The West Bank accounts for the largest share of the value of agricultural production. During the years when the weather patterns are more favourable for plant production the share for the West Bank rises as a relatively small area is irrigated. Hebron, Jenin and Tulkarem have the largest value shares. The value of production for the governorates, the West Bank, the Gaza Strip and for the entire area for 2000/2001, a relatively unfavourable weather year, is given in Annex Table 5.

Costs of Production

The costs of agricultural inputs in total and for the major components from 1997/98 to 2000/01 are shown in Annex Table 6 and the costs during 2000/01 by governorate/district are given in Annex Table 7, which shows that nearly 78 percent of the costs took place in the West Bank. Normally, the costs of producing plant products are influenced significantly by the quantity produced. In a high production year a larger quantity of inputs such as seeds, fertilizers and pesticides are required and therefore total costs rise, and in the low production years they fall. This pattern tends to be accentuated as prices usually are higher in high production years due to the need for larger quantities. The cost of seeds, fertilizers and pesticides therefore were higher in 1997/98 and 1999/00, the high production years, than in 1998/99 when the harvests were a disaster. However, PBCS reports that costs declined in 2001/02, a high production year, from US$413.7 million to

US$397.9 million, a 3.8 percent reduction. Costs were essentially maintained in the West Bank (up 0.6 percent) so all of the reported reduction took place in the Gaza Strip (-19.3 percent). Either the costs are seriously understated for the Gaza Strip or the agricultural sector in this area has been much harder hit by the events since September 2000 than those in the West Bank. The largest reported reductions were in the costs of purchased chicks and oil, lubricants and fuel, but there were reductions for every cost category except animal feedstuffs.

The normal situation differs for livestock producers. They experience lower costs for locally produced feeds when the crops are good, and higher prices for such products when they are low. However, a very large share of the feed is imported so their costs depend largely on the cost of imported feedstuffs. The increase in animal numbers continued to push the quantity of inputs and services to higher levels. The cost of feed is far above the cost of any other input, and is reported to have increased from 1999/00 to 2000/01 by nearly 15 percent, the largest percentage increase for any input and largely the consequence of closures during their first full year. Another increase of 7.3 percent during the second year of the crisis took place according to the reports for 2001/02.

The cost increases for feed are largely the consequence of the difficulties producers have in obtaining access to feed, especially those producing poultry meat and eggs. This has serious implications for productivity given that a maximum two-day delay in feeding layers can cause output to decline and never recover. The situation is similar for broilers, which reach optimum weight for slaughter at six weeks under rigid time schedules. When curfews occur, or closure disrupts marketing, producers experience serious declines in productivity.

A comparison of costs from 1998/99 to 2000/01, both below normal production years, can be used to obtain an indication of the relative magnitude of the cost increases, even though the increases for items associated with plant production most likely are overstated as production was further below normal in 1998/99 than in 2000/01. Nevertheless, the greatest relative increase in costs was for water and electricity, which had increased by 70 percent over the two years. Cost increases for the other inputs were 50 percent for pesticides, 43 percent for seeds, 31 percent for fertilizers, 27 percent for veterinarian medicines, 21 percent for oils and fuels and 19 percent for feeds. The balance sheets prepared by UNSCO, based on income and expenditure data for seven farmers, show the serious consequences of the internal closures and extended curfews.

A rough indication of the increase in input prices can be seen by noting the increase in Israeli input prices, which influence costs to Palestinians who import a large percentage of total inputs from Israel.

Table VI.19: Israeli Price Index of Inputs in Agriculture, 2001 – 2002

	2001	2002	% change
Price index of input in agriculture			
- general	103.2	109.0	5.6
- without wages of farmhands	101.3	108.1	6.7
Input in vegetable crops	104.4	109.8	5.2
Input in Livestock	101.6	107.8	6.1
Fodder	101.7	109.8	8.0
Chicks	100.3	98.9	- 1.4
Seed, bulbs, and saplings	99.1	107.6	8.6
Fertilizer and manure	100.4	103.4	3.0
Pesticides	101.4	108.4	6.9
Water	109.4	115.0	5.1
Fuel, lubricants and electricity	100.6	112.1	11.4

Source: Israel Central Bureau of Statistics.

According to ACAD Palestinian farmers costs are high in that they must pay a VAT tax of 17 percent on approximately US $100 million of agricultural inputs. Farmers have organized a proposal in the Palestinian Legislative Council for exemption of this cost.

Producer Prices

From 1996 to 2000 producer prices were increasing faster than food prices at retail, having risen by 34 percent compared with 21 percent for food. Producer prices for export items increased sharply from 1998 to 1999 and

modestly again in 2000 and 2001. The increase from September 2000 to December 2001 was led by meat products, while cereal products had the smallest increase. From 2000 to 2001 producer prices in the local markets were essentially unchanged, up 0.1 percent, while export prices were up 2.8 percent, as the impact of the closures cut the effective demand for food at home and made trade in products more costly and difficult. The retail price for all food was down by 0.7 percent in 2000/01 and up by only 1.9 percent for 2001/02, due mainly to the sharp declines in economic access to food by consumers. In these circumstances producer prices on average declined, which placed producers in an extremely difficult cost/price squeeze.

Value Added by Agriculture

Since 1995/96 the value added by the agricultural sector has ranged from a high of US$588.7 million in 1999/00 to a low of US$387.9 million for 2000/01. This 35 percent (US$200.8 million) reduction from one year to the next was extreme, as higher costs combining with disappointing harvests placed producers in a serious cost/price squeeze. For the first time costs were greater than the value added. This extreme reduction in the value added together with lower producer prices for the much better harvests in 2001/02 resulted in an average value added for the first two years after September 2000 of US$422.9 million, well below the averages of US$510.0 million for the previous two years and US$489.7 million for 1996/97-1997/98. As a percent of GDP (excluding East Jerusalem) the value added declined sharply, with the 1997/98 value added being equivalent to 13.5 percent of GDP in 1998 and the 2000/01 value added representing only 9.6 percent of the sharply reduced aggregate GDP in 2001. However, the modest increase in value added for 2001/02 combined with the large reduction in GDP to bring the percentage back to 13.5 percent for 2002.

Table VI.20: Value Added by the Agriculture Sector (000 US$)

Variable	1995/1996	1996/1997	1997/1998	1998/1999	1999/2000	2000/2001	2001/2002
Value of Agricultural Production	754291	786510	953617	760639	979817	801601	855844
Cost of Agricultural Inputs	295896	377992	382777	329313	391137	413724	397927
Value Added of Agricultural Sector	458395	408518	570840	431326	588680	387877	457917

Source: PCBS.

The sharp drop in GDP for 2002 together with the modest increase in value added brought the share from agriculture back to the 1998 level. However, this is not because the sector is doing so well. Instead, it is because the rest of the economy is doing worse. Nevertheless, it does indicate that the agriculture sector has not being hurt as bad as the rest of the economy in 2002.

Trade with Israel and between the West Bank and the Gaza Strip

Israeli statistics, as reported by the World Bank, indicates that the relative decline in imports from Israel since October 2000 was larger than the decline in exports of Palestinian goods to Israel. During the first three-quarters of 2000, imports grew more rapidly than exports but then fell dramatically with the initiation of the closures. Exports did not change as much**.** In absolute terms, however, both import and export volumes decreased. Exports of agricultural goods are estimated by the World Bank to have been particularly affected by the crisis, with losses equivalent to 30 percent of their export potential in 2001 (compared to 24 percent losses in the potential value of exports in manufacturing). PCBS data indicate that the largest percentage reductions were in vegetables, canned meat and citrus, but much of this could have been the consequence of lower production in 2000/01. According to preliminary data from the MoA, some 103,000 tonnes of produce passed from the West Bank and Gaza Strip to Israel in 2002. This was slightly down from 105 000 tonnes in 2001. In contrast, 96 000 tonnes were transferred in 2000 and 97 000 tonnes in 1999.

Table VI.21: Total Volume of Palestine Exports in Agriculture Products, Marketing Years 1999/2000 to 2000/2001 in metric tonnes

	1999/2000	2000/2001	Change	% Change
Fruits o/t citrus	2 659.0	5 847.5	3 188.5	119.9
Vegetables	74 044.5	32 260.9	-41 783.6	-56.4
Citrus	43 166.5	33 999.3	-9 167.2	-21.2
Flowers(number)	58 016 600	56 404 400	-1 612 200	-2.8
Strawberry	920	994.5	74.5	8.1
Fish	179	152	-27	-15.1
Olive Oil	404	726.8	322.8	79.9
Canned Olives	68.5	69.2	0.7	1.0
Canned Meat	946	436.5	-509.5	-53.9

Source: PCBS

Trade and Competitiveness of Agricultural Products

The Palestinian Authority's Ministry of Agriculture was established in 1994 and has pursued a policy of minimal direct support to farmers. The difference between government intervention policies is perhaps due to significantly higher average annual per capita donor support to Israelis than to Palestinians (US$500 vs. US$200) as well as the fact that Israel has a sophisticated farm subsidy program already in place.

Although direct support is minimized, the Israeli policy of protective tariffs on agricultural products and inputs apply to the West Bank and Gaza Strip under the customs union agreed upon in 1994. Import tariffs for most agricultural products and inputs range from 100-350 percent. The result is that prices in the West Bank and Gaza Strip are significantly higher than world market prices for many products and inputs.

Trade agreements under the Oslo Accord also impact Palestinian costs. While Israeli farm products have free access to the markets of the West Bank and Gaza Strip, Palestinian agricultural exports to Israel are restricted. The MoA estimates that Palestinian companies pay 30 percent higher transaction costs than Israeli companies for identical export shipments.

According to the WTO, Israel maintains a relatively large array of trade and trade-related measures intended to support its domestic agricultural sector. Domestic support to agriculture reached US$524 million in 1997, but declined in 1998, and has remained below the ceiling set by Israel's WTO commitments. Under these commitments, domestic support for the agricultural sector will be reduced over a ten-year period beginning in 1995 by around 12 percent, from around US$646 million in 1995 to close to US$569 in 2004. These policies have significantly impacted the competitiveness of Palestinian agricultural products.

Israel provides subsidies to cut flowers, vegetables, and citrus (all of which the Palestinians export), as well as goose liver and cotton. Other measures benefiting Israeli agricultural exports include those available to all sectors, such as export promotion and marketing assistance. In addition to price support, the Israeli Ministry of Agriculture operates deficiency payments and investment programs in support of horticulture, eggs, poultry, and bovine meat production. Other measures consist of specific assistance programs for co-operative villages under a Rural Department debt-relief scheme, expenses of the Agricultural Research Centre, new settlement infrastructure and other services to farmers. All direct and indirect subsidies impact the costs and competitiveness of Palestinian products.

Farmers in Israel, the Palestinians main trading partner and competitor in regional and international markets, received government support amounting to one-fifth of the value of agricultural output in 1997. The WTO reports that for calendar year 1997 (the most recent data available), almost one half of the product-specific support was for milk production, followed by poultry meat (28.3 percent of the total) and eggs (17.1 percent). Although government interventions in support of Israeli agriculture have been declining during the period for which data are available, both general and targeted support caused distortions in prices on products of importance for Palestinian farmers, including dairy, poultry, meat, cut flowers, vegetables, and citrus fruit. This means that Palestinian food products were not competing on a level playing field with their Israeli competitors in

domestic markets, Israeli markets, or international markets.

When the *al Aqsa Intifada* began Israel immediately adopted emergency subsidies for the agricultural sector, reflecting its interventionist approach to agriculture. These subsidies were in addition to those described above that were already in place. There is little data available on total current farm subsidy programs other than from the Bank of Israel which reports that subsidization of the price of water for agriculture increased in 2001 to NIS 333 million compared with NIS 129 million in 2000 to compensate farmers for the reduction in water quotas.

In contrast, Palestinian farmers have receive little, if any, emergency support for damages and losses, which according to the MoA reached US$845 million between September 2000 and December 2002. The estimate included losses associated with the demolition/destroying/razing of greenhouses, poultry and livestock farms, wells, farm houses, irrigation systems and ponds, fences and walls, main water pipelines, packaging and experiment station, nurseries, crop, tree and vegetable planted land as well as killed cattle, sheep, goats and poultry and damaged beehives. The loss estimates included lost opportunities due to the devastation.

Productivity

Palestinian agriculture has generally been competitive with Israel in labour-intensive crops such as fresh vegetables and fruits, flowers and in certain poultry products and dairy products. It was also considered generally competitive in some traditional commodities such as stone fruits, olive oil and olives, mainly on account of the use of family labour with a low opportunity cost. Exports of these crops were competitive on regional and international markets even though they have never been subsidized and despite the fact that Palestinian farmers do not enjoy domestic support programs such as price guarantees, crop insurance or direct payments.

Studies conducted on the basis of costs and returns data from the early to mid-1990s concluded that agriculture in the West Bank and Gaza Strip appeared to be competitive with Israel in labour-intensive greenhouse production of vegetables, flowers and strawberries. The net financial margins for tomatoes, cut flowers, cucumbers and peppers were exceptionally large. Other crops that appeared to be competitive with Israel were rainfed grapes, olives and stone fruits, but cereals and citrus were deemed marginal. Since then productivity of vegetables and fruit has increased more in Israel than in the West Bank and Gaza Strip, and so these conclusions may no longer hold. Yet, productivity of these products is high by world standards in Israel and the yields in the West Bank and the Gaza Strip are higher than in Jordan for most of these products.

The earlier review of the trends in exports revealed that even though there are exports in every food group the only one that in good years shows a net value of export position is vegetables. By now it appears that the list of fully competitive food products is a relatively short one with respect to trade with Israel, and not much longer with respect to other countries. And the list is dominated by vegetable products, with very few fruits on it.

Olive yields now are far below those in Israel, Jordan or the other large olive producing countries. For example, the average yield over the last six years was 977 kg per hectare, while it averaged 1 611 kg, 2 136 kg and 2 703 kg in, respectively, Jordan, Israel and Italy. While there appears to be ample opportunity to increase the productivity of Palestinian olive trees the economic viability of the crop has become increasingly marginal, with productivity low, and input costs, notably labour, having increased. Domestic prices of olive oil early in 2003 were well below the prior year level, due to much larger production, the general scaling down of wholesaling activities and the weakening of marketing channels due to closures. There are other factors affecting the sector, though, which originate from causes unrelated to closures, such as a general lack of appropriate post-harvest infrastructure, insufficient quality control, and low productivity. And the competitiveness of olive oil has decreased as Israeli tariffs cuts have exposed Palestinian production to international competition.

The number of employees it takes to turn olives into olive oil now is well below the number employed as late as the mid-1990's. Although the trend is downward, employment rises and falls with large or small harvests. Nevertheless, the gross value added from olive presses activity is significant, ranging from US$968 000 in 1998/99 to US$6 747 000 in 1999/00. The compensation of employees these years was US$193 000 in 1998/99 and US$1 million in 2000.

Agricultural Credit

The Economist Country Report for the Occupied Territories (January 2003) reports that in 2000 agriculture received only 1.6 percent of formal credit available, valued at US$21 million. According to the Palestinian Monetary Authority, agriculture received the smallest amount of bank credit of any sector in 2002, totalling US$16 million, compared to US$101 million to manufacturing and mining and US$116 million to construction. The share of agriculture of total bank credit declined from 2.2 percent in 1997-2000 to an average of 1.4 percent in 2001-2002.

Sources of agricultural finance in the West Bank and Gaza Strip have changed significantly over time. According to UNCTAD, at one point formal credit facilities had a role in meeting short-term credit needs, and explain the relatively rapid expansion in many farming sectors during the pre-occupation period In 1994, with EU financial and technical support, most non-commercial credit institutions were merged into one institution called the Palestinian Banking Corporation (PBC). Currently, the main lenders are the PBC and the Arab Centre for Agricultural Development (ACAD). Over the last seven years, the PBC had a minimal presence in the agricultural sector, with only 15 percent of its lending portfolio destined for agricultural lending. The interest rate averaged from 8 percent to 9 percent (on a US percent basis), which was considered high by most firms. ACAD also offered loans, at approximately 12 percent.

As different lending agencies have entered and exited the Palestinian agricultural markets, a more or less permanent feature has been the effective credit offered by dealers of farm supplies as middlemen. Traditionally, large amounts of seasonal credit were granted by traders to farmers. Repaying the trader in kind (through delivery of produce) conforms to the rules of Islamic banking (*« Murabaha »*), which was seen as an advantage by many growers compared to other forms of credit. This approach to credit intensifies the relationship between suppliers of inputs and farmers, or between the farmers and industrial processors (cow farmers and milk processors). Suppliers, especially in poultry, provided large amounts of credit in the form of productive assets to farmers.

Internal closure has also reversed normal trends in economic growth, causing lenders to look at risk differently. Due to the limitations on travel between villages, towns and cities in the West Bank, small local markets must now provide goods and services once available in nearby towns and cities. Consumers must rely on only local production and services. This trend has been formalized by ACAD which reports that their new focus is on lending to small service enterprises in rural areas, such as barber shops and photo stores, rather than higher-risk farming activities. According to ACAD Palestinian farmers costs are high in that they must pay a VAT tax of 17 percent on approximately US$100 million of agricultural inputs. Farmers have organized a proposal in the Palestinian Legislative Council for exemption of this tax.

State of the Agricultural Research and Extension System

Current operations of public institutions, including the MoA are reported at a low level due to overall Palestinian Authority budget constraints. The Palestinian Authority's revenues fell dramatically since September 2000, but have reached approximately half their 2000 level through support from donor countries. Yet, the MoA Extension Service has progressed significantly in the last five years. The emphasis has been on building a participatory approach that links villages, governorate officials, governorate MoA officials, and the national MoA office on a variety of issues such as project identification and technical training. An annual publication is made available that outlines the annual work plan and objectives of the extension service for each of the 17 governorates ("Annual Governorate Report"). Monthly monitoring and evaluation reports are submitted to the MoA in Ramallah indicating progress in each area, comparing planned activities and objectives with implementation problems. At present, the main constraints reported by extension personnel are lack of funds, lack of staff, and lack of communication facilities or equipment. Overall, there are 250 extension agents (agricultural engineers) in the field (not including research station employees).

The MoA has prepared a medium term plan for extension and applied research which includes the establishment of several comprehensive links with NGOs, donor groups, and all sectors of the agricultural economy to account for all interests in project planning and implementation, including training and extension services. The extension service is currently focused on rehabilitation and emergency problems in the sector.

Irrigation Systems

Over half of the irrigated area is in the Gaza Strip, where about 70 percent of the cultivated land is irrigated. Although nearly half of the irrigated area is in the West Bank, because the cultivated area is so much larger only about 7 percent of it is irrigated although in Jericho 86 percent of the cultivated area is irrigated. About three-fourths of the irrigated area in the West Bank is used to produce vegetables and around 18 percent to produce fruits, leaving 8 percent for field crops. In the Gaza Strip the pattern differs, with a little over half devoted to fruit production, 35 percent to vegetables and nearly 14 percent to field crops. In 2001 the Gaza Strip agriculture accounted for nearly two-thirds of the available water while in the West Bank domestic and industrial use captured 52 percent of the supply. The daily per capita availability of water is very low relative to Israel, or even Jordan, and is extremely low in the West Bank.

Water for irrigation comes from wells, the Israeli Water Company Mekorot and, in the West Bank, springs. In the Gaza Strip over 96 percent comes from wells with the remainder from the Mekorot, while in the West Bank close to one-half comes from wells, around 28 percent from Mekorot and the rest from springs. In the West Bank nearly 80 percent of the water from wells is subordinated to the Israeli Water Company Mekorot, 100 percent in Tubas, Tulkarem, Qalqilia, Jericho and Jerusalem and about 90 percent in Ramallah/Al-Bireh and 80 percent in Nablus. In Jenin, Salfit and Hebron all the well water comes from Palestinians and about 80 percent in Bethlehem.

The Israeli controlled water is made available to Palestinian producers after assuring adequate supplies for its needs, including for the settlements. The water, from Palestinian aquifers in the West Bank, is sold by the Israelis for relatively high prices. As previously noted, the price of water in Israel is subsidized, which adds to the difficulties in making Palestinian products competitive.

The price of one cubic meter bought from a municipality-managed network ranges from NIS 3 to 4 throughout the West Bank. A cubic meter of water purchased from a privately managed network generally ranges from NIS 1 to 2. The price of a cubic meter obtained from a water tanker varies: prices in the range of NIS 12 to 15 are often observed, but can climb as high as NIS 22 per cubic meter.

The 1995 Interim Agreement recognized Palestinian water rights, but without defining them. Instead it specified that these rights would be settled in the context of permanent status negotiations. The treaty also set up a permanent Joint Water Committee which deals with all water and sewage-related issues in the West Bank. It issues the required well-exploitation permits and any new well drilling and water development require the Committee's agreement.

The Impact of the Separation Barrier on Agricultural Production

A defining feature of the current *Intifada* is the construction of a "separation barrier" – a complex series of separation barriers, barriers, trenches and fences. According to PCBS, the three West Bank governorates where construction is most advanced produced US$220 million in agricultural output, or 45 percent of total agricultural production in the West Bank. It is conceivable that the separation barrier will make permanent the movement restrictions evident during closure. Once completed, the import of Israeli products in Palestinian markets will continue, dampening prices of domestically produced goods.

The process of the separation barrier's construction has itself had a major economic impact. While the relative intensity of the impact varies by location and economic activity, its immediate effects include: a) the destruction of agricultural land and assets; b) inaccessibility to agricultural land and assets, including water resources; c) added limitations on the mobility of people and goods, and therefore higher transactions costs; and d) uncertainty about the future and a consequent dampening of investment in economic activities including agriculture. Uncertainty poses particular dilemmas for agricultural producers – these include questions of whether to plant at all, the choice of crops to plant, the amount of investment to make in agricultural activities, and how to market the output in the face of movement restrictions.

The first phase of construction, involving extensive land requisition and clearing of land and buildings along an approximately 126 kilometre route through the north-western governorates of Jenin, Tulkarem, Qalqilia, and Salfit, was officially launched on 16 June 2002. The Jenin, Tulkarem, and Qalqilia governorates contain 37 percent of all the agricultural land in the West Bank. Work is also underway on 21 km in the Bethlehem and Jerusalem areas. Of these 147 km, 80 were scheduled to be completed by May 2003 with the remaining 67 finished by July 2003. Phase Two construction has also begun on a 45 km stretch running east from Salem checkpoint in northernmost Jenin governorate. It is reported that the Separation barrier, or at least a series of

"buffer zones," should extend along the entire western face of the West Bank, a distance of approximately 360 km.

According to the Local Aid Coordination Committee (LACC), the security barrier will be an elaborate structure. Depending upon location, sections will comprise some (or all) of the following elements: four-meter deep trenches on either side; a dirt path "to which access will be forbidden" where potential infiltrators would be exposed to fire; a trace path to register foot prints; an electronic warning or "smart" fence; a concrete barrier topped with barbed wire; a concrete wall rising as high as eight meters; a two-lane military patrol road; and fortified guard towers placed at regular intervals. In addition to the separation barrier complex, there are also plans for "depth barriers" 150 meters in length to be erected a few kilometres east of the principal barrier and designed to funnel access into communities east of the separation barrier through a limited number of checkpoints.

LACC reports that according to plans submitted to the Israeli High Court, the first phase of construction will incorporate 26 "agricultural crossings" along its route, with an additional five crossings in the "depth barriers" located further to the east. Palestinian farmers will reportedly be able to access their land through these gates. While protocols for these arrangements have not yet been issued, an indication of the nature of the gate system was provided to UNSCO in February 2003. The intention is to construct three types of gates: for the passage of persons; for the passage of agricultural vehicles; and for the transport of agricultural goods using a "back-to-back" system (requiring off-loading and re-loading between vehicles). Residents of the western side of the fence would be granted special permits by the Israeli Civil Administration to cross to the eastern side, as would farmers living on the eastern side with fields in the west.

As of December 2002, documentation of separation barrier-related destruction of agricultural lands and assets had been conducted in 53 communities in the Jenin, Tulkarm, and Qalqilia governorates, an area containing an estimated population of 141 800. Direct damage to these communities from wall and barrier preparation and construction up to then included the destruction of some 84 000 dunums (8.4 sq km) of olive and other fruit trees, 615 dunums of irrigated land (including greenhouses), 37 km of water networks and 15 km of agricultural roads. In addition, a total 238.3 sq km of land are being isolated between the Green Line and the separation barrier, with 57 percent of this land cultivated, mostly with olive trees and field crops.

Table VI.22: Agricultural Land and Production Value, 1999 and 2000 Jenin, Tulkarm, Qalqilia Governorates

Governorate	Area of Agricultural Land (km^2)				Production Value (US$1000)				Value per km^2 (US$1000/$km^2$)	
	1999	Share WB	2000	Share WB	1999	Share WB	2000	Share WB	1999	2000
Jenin	271	21.7	290	20.9	46 930	16.8	121 935	25.0	173.2	420.5
Tulkarm	148	11.8	146	10.5	47 034	16.8	60 667	12.5	318.0	416.1
Qalqilia	62	5.0	76	5.5	24 001	8.6	37 321	7.7	387.1	490.4
Total	481	38.5	512	36.9	117 965	42.2	219 923	45.1	245.3	429.6
West Bank	1 251	100.0	1388	100.0	279 548	100.0	487 237	100.0	223.5	351.0

Source: PCBS

According to LACC, based on PCBS data, in 2000 the three governorates produced US$220 million in agricultural output, or 45 percent of total agricultural production in the West Bank. Approximately 100 000 dunums (10 000 ha) have already been confiscated.

Per square kilometre of agricultural land, the three governorates produced US$430 000 in output, an output value per square kilometre 41 percent more than that of the other West Bank governorates. Out of this agricultural land, 5 percent (26 sq km) is irrigated; a proportion slightly above that of the West Bank as a whole. However, production from this irrigated 5 percent exceeds that of all of the rain-fed land – 181 000 tonnes vs. 155 000 tonnes of produce in 2000. Expressed as yield per square kilometre, the difference is nearly 7 000 tonnes per sq km on irrigated land, compared to 319 tonnes per sq km on rain-fed land. Yields per sq km are considerably greater than in the other West Bank areas: 32 percent greater for rain-fed land and 56 percent greater for irrigated land.

According to PARC, during the first phase of construction, which is presently ongoing, farmers are informed about the separation barrier construction through leaflets left on trees near their homes. In the past few months, these announcements informed farmers that they would be given the opportunity to protest the confiscation of lands, but all such claims have been rejected by the Israeli Supreme Courts. The controversy at the moment relates to the reason why the separation barrier is not being built on the green line.

The economic situation of Palestinian villages near the *Green Line* is strongly related to the Israeli economy. The main source of income for families in these villages came from working in Israel. Since the beginning of the *Intifada*, these areas have experienced high rates of unemployment and insufficient water, among other problems. The construction of Israel's separation barrier exacerbates these difficulties, and also creates "new poor" when farmers lose their land or farm assets.