S P E C I A L R E P O R T

FAO/WFP CROP AND FOOD SUPPLY ASSESSMENT MISSION TO THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

30 October 2003

Mission Highlights

- DPR Korea continued its recovery in agricultural production that started in 2001, with this year's food production showing some improvement over the previous three years.
- The main factors behind this continued recovery include favourable weather conditions especially at the beginning of the season, a relatively low incidence of crop pests and diseases, increased application of fertilizer provided through international assistance, improved irrigation facilities in the main Cereal Bowl region of the country due to completion of the Kechan-Taesong Lake canal funded by the OPEC, improved availability of electricity for irrigation pumping stations, and enhanced mechanization resulting from greater availability of fuel and spare parts.
- The 2003/04 cereal production, including potatoes in cereal equivalent, is forecast at 4.16 million tonnes, the best harvest over the last nine years, and 4.7 percent larger than last year's revised estimate.
- Despite the recovery over the last three years, domestic production still falls well below the minimum food needs and the country will again have to depend on substantial external food assistance as its capacity to import commercially remains highly constrained.
- The cereal deficit in 2003/04 (November/October) is estimated at 944 000 tonnes. With commercial imports estimated at 100 000 tonnes, concessional imports at 300 000 tonnes mainly from the Republic of Korea and anticipated food aid at 140 000 tonnes, there remains a deficit of 404 000 tonnes which needs to be covered by additional food aid and concessional imports.
- To deal with this chronic food shortage, it is recommended that in addition to providing urgently needed food aid, the International Community enter with the Government into a policy dialogue to set an enabling framework to mobilize the economic, financial and other assistance needed to promote sustainable food production and overall food security.
- Based on Household Food Economy Analyses, that revealed *inter alia* the increased vulnerability of Public Distribution System (PDS) dependant households to food insecurity due to their deteriorated purchasing power, the Mission recommends the mobilisation of 484 000 tonnes of food aid (about 400 000 tonnes in cereals) for 6.5 million vulnerable people for calendar year 2004.

1. OVERVIEW

An FAO/WFP Crop and Food Supply Assessment Mission visited the country from 23 September to 4 October to assess the 2003 crop harvest, forecast 2004 production of winter/spring wheat, barley and potato crops, and estimate cereal import requirements for the 2003/04 marketing year (November/October), including food aid needs.

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The Mission interviewed government and cooperative officials, and observed standing and harvested crops still in fields to assess yields. The Mission also visited schools, nurseries, hospitals, Public Food Distribution Centres, and rural and urban families. The Mission covered seven out of 12 provinces of the country, which account for over 80 percent of the national cereal and potato production. The provinces visited include North Pyongan, South Pyongan, North Hwanghae, South Hwanghae, Pyongyang (rural districts and counties), Kangwon and South Hamgyong. Discussions were held with staff of UN agencies, NGOs, resident diplomatic missions, and government officials at the national, provincial and county levels. The Mission also used rainfall and temperature charts and high resolution SPOT-4 satellite images to verify vegetation conditions in 2003 compared to previous years.

This year rainfall and temperature at the beginning of the season were more favourable for crop production than they were last year. This resulted in generally better yields of spring crops and of the winter wheat sown at the end of 2002. It also benefited nursery operations and the transplanting of paddy, as well as the timely planting and establishment of maize. Some local flooding was reported, but very much less than in previous years. However, towards the end of August and throughout September most areas experienced below-average temperatures and above-average cloud cover which delayed crop maturation and reduced yield expectations. Though crop pests and diseases were widely reported this year, their levels of incidence were generally relatively low. Improved availability of electricity resulted in more effective functioning of irrigation pumping-stations; fewer paddy fields dried out during the growing season than in recent years and in cases where there were prolonged breaks in power supply favourable rainfall was often sufficient to alleviate the problem. The use of fertilizer increased again this year, and more tractors were operational as a result of better access to fuel and spare parts. Construction of the Kechan-Taesong Lake canal funded by the OPEC has been completed this year improving gravity irrigation facilities in the main Cereal Bowl region of the country. This combined with the land re-alignment exercise in the paddy fields has created improved conditions for increasing irrigation efficiency.

This generally positive situation is expected to result in a 4.7 percent increase in estimated crop production (cereal and cereal equivalent) for 2003/04 compared with 2002/03 (revised), and a continuation in the improvement in domestic food production from the low levels seen in the mid to late 1990s. It should, however, be noted that the national food-availability estimates for the coming year include forecasts for winter and spring-sown crops which will not be harvested until the second quarter of 2004. The contribution of these crops to the national total is expected to be about 12 percent. The production estimate would need to be revised once the harvest outcome of these crops is known.

Despite the good outcome, the 2003 cereal production still remains well below the minimum consumption needs of the country. The estimated total cereal production, including potatoes in cereal equivalent, available for consumption in the 2003/04 marketing year (Nov./Oct.) amounts to 4.156 million tonnes. Food use, based on an estimated population of 23.62 million, and other utilization needs are estimated at 5.100 million tonnes. This results in a deficit of 944 000 tonnes. Commercial imports are estimated at only 100 000 tonnes due to low import capacity of the country, while concessional imports are estimated at 300 000 tonnes and pledged/pipeline food aid at 140 000 tonnes. This leaves an uncovered deficit of 404 000 tonnes which needs to be covered by additional food aid and concessional imports.

Although a Government/UNICEF/WFP nutrition survey in October 2002 indicated an improvement in the general nutritional status of children, malnutrition remains alarmingly high. One problem is the still inadequate availability of basic food, despite the increases in cereal production, and of food items that allow for a more balanced diet. Another problem is the further deterioration of the already insufficient purchasing power of many urban PDS-dependant households who have been recently displaced or under-employed due to the transitory effects of the economic reforms, and who at the same time face steep increases in food prices.

Continued targeted food aid interventions for vulnerable people are therefore called for to prevent a slippage towards the previous malnutrition levels. Children in orphanages, kindergartens and nurseries, primary school children, pregnant and nursing women and elderly should continue to form the core of WFP's beneficiaries. In addition, efforts should be made to reach low income PDS-dependants in highly urban areas who may have become food insecure. In order to identify these households, WFP needs access to verifiable data on incomes, prices, family size and other information to complete its Household Food Economy Analysis, and to design the most appropriate assistance modality. The Government has recently been more forthcoming with this data than in the past.

2. OVERALL ECONOMIC SETTING AND AGRICULTURE IN DPR KOREA

2.1 Macroeconomy [1]

The economic recovery that began in 1999 continued for the fourth year in a row with an estimated GDP growth rate of 1.2 percent in 2002 following a 3.7 percent growth the year before (see table 1). The bulk of this growth during the last two years has been due to improved production in the agriculture sector. In spite of this growth the country has not yet recovered the per capita income level of US$ 811 achieved in 1997. The population suffered from a decline in per capita income of nearly 30 percent in 1998 compared to the year before. The per capita income in 2002 has been estimated at US$ 762. The DPR Korea had experienced a severe economic decline since early 1990s with unfavourable changes in trade with its traditional partners in the former USSR and Eastern Europe combined with major natural disasters affecting agricultural output in 1996, 1997 and 2000.

Total trade deficit increased from a low level of US$ 448 million in 1997 to a record high of US$ 1.02 billion in 2001 with a sharp improvement in 2002 at US$ 790 million (see Table 1). Trade with the Republic of Korea (ROK) has increased substantially over the years (excluded in Table 1 below). ROK is now the North's number two overall trade partner (after China) and a top export destination for the first time. However, these and other positive developments such as improvement in the nutritional levels of children as outlined in the results of the Nutrition Assessment 2002, are not enough to tackle the chronic food insecurity problems for the general population.

Table 1: DPR Korea – Key Economic Indicators, 1997-2002 [1/]

	1997	1998	1999	2000	2001	2002
Estimated Gross Domestic Product Growth Rate (% real change)	-6.3	-1.1	6.2	1.3	3.7	1.2
Agriculture, forestry & fishing : GDP Growth Rate (% real change)	-3.8	4.1	9.2	-1.9	6.8	4.2
GDP per head (US$)	811	573	714	757	706	762
Total Merchandise Exports (US$ m)	1 025	644	597	708	826	735
Total Merchandise Imports (US$ m)	1 473	1 170	1 212	1 686	1 847	1 525
Total Trade Deficit (US$ m)	448	526	615	978	1 021	790

1/ Excluding inter-Korea trade.
Source: Bank of Korea, Seoul and Korea Trade-Investment Promotion Agency, Seoul
(as cited in the Economists Intelligence Unit 2003 Country Report).

2.2 Agricultural sector

Agriculture, including forestry and fisheries, contributed about 30 percent of GDP in 2002 (Bank of Korea). The performance of this sector has been erratic with negative growth rates in 1997 and in 2000. Over the past several years, natural disasters such as droughts, floods, tidal surges, hail storms, typhoons and extremely cold winters have affected agriculture with varying degrees of severity, with consequent adverse impacts on food production. Also the precarious foreign exchange situation has not allowed significant commercial imports of much needed agricultural inputs such as fertilizer, pesticides, plastic sheeting, spare parts for machinery, tyres for tractors and trucks, fuel, etc. Over the years domestic production of fertilizer has declined to a level of about 10 percent of total requirement, increasing reliance on fertilizer donations. Yields of the main crop (paddy) used

[1] Based on EIU; and Bank of Korea, Seoul publications.

to be around 7 or 8 tonnes per ha during the 1980s, but now they are about half of that due to lack of agricultural inputs. In order to increase total food production in the country, every possible piece of cultivable land is being brought under production, but cultivation of marginal lands has unintended consequences of soil erosion and further reduction in overall land productivity. The total food gap in the last 8 years has ranged from 0.97 million tonnes in 2002/03 to 2.2 million tonnes in 2000/01. Thus productivity improvement is desperately needed.

About 50 percent of tractors are not operational due to shortage of spare parts, tyres and fuel. The obsolete and decaying farm machinery and irrigation facilities need rehabilitating or systematic replacing. Irrigation facilities require streamlining, preferably linked to large gravity-fed networks. More fertilizer alone is not likely to provide sustainable enhancement in agricultural productivity; other innovative, environmentally non-degrading agricultural techniques (such as soil fertility improvement with green manuring, alternatives to chemical fertilizer, crop rotations, integrated pest management, policy reforms, etc.) need to be put into practice. Double cropping of wheat and barley after rice and maize (cereal after cereal) on already exhausted soils is non-sustainable. Introduction of leguminous crops in the crop rotation is vital. Thus, increased assistance from the international community is needed towards rehabilitation of industries, infrastructure and the agricultural sector.

2.3 Economic policy adjustment

In July 2002 the Government announced substantial increases in wages, prices and currency exchange rate from previously highly subsidised or artificially low levels[2]. Agricultural commodities were also affected by this economic policy adjustment. Accordingly, rice and maize prices in the public distribution centres are now 46 won and 24 won per kg, respectively, compared to about 0.9 and 0.7 won/kg before July 2002. Farm gate prices after the adjustment are 29 won/kg for paddy (or 42 won for rice) and 20 won/kg for maize. Prices of various inputs such as seed, fertilizer, pesticides, fuel, electricity, etc. have gone up but generally seem to have resulted in better overall economic incentives to farmers. Cash crops such as tobacco and cotton provide relatively greater profitability than the usual staple crops, however, their cultivation is restricted until the targets for staple cereals are met.

There has been an important market reform since June 2003 as farmers' markets for the first time are officially recognised in the country. In addition to vegetables, potatoes and green maize from kitchen gardens, a variety of consumer goods are sold in these markets. Farmers, however, do not have direct access to these markets to sell their staple food commodities (over and above their grain allocation for home consumption) because these have to be sold to the government procurement agency. If allowed, farmers' markets throughout the country can play an important role in this new incentive-based system. It is recommended that in addition to providing urgently needed food aid, the Government and the International Community enter into a policy dialogue to set an enabling framework to mobilize the economic, financial and other assistance needed to promote sustainable food production and overall food security.

In addition, the DPR Korea has implemented a policy of controlled economic liberalization on a limited scale in three selected special administrative zones in the country. These are Sinuiiju in the north-west bordering China as a free economic area, Mt. Kumgang in the south-east as tourist resort, and Kaesong in the south-west as an industrial park. Transportation is being improved with re-connection of road and rail links to Seoul in the Republic of Korea. These special administrative zones are expected to generate economic growth. However, presently these are in their infancy and only time will tell what impact they will have, if any, on the economy.

[2] As part of this policy wages were increased by about 20 fold depending on the type of work, and the exchange rate was increased from 2.15 won per USD to 151 won per USD.

3. FOOD CROP PRODUCTION IN 2002/03 (REVISION)

The figures presented in the report of the FAO/WFP Crop and Food Supply Assessment Mission of 2002 included production forecast for winter and spring crops that would be harvested in 2003. These figures were based on planned cropping areas and average yields from the previous five years. The actual areas and production of these crops have now been reported by the Ministry of Agriculture and their substitution into the 2002/03 table results in a slight increase in production for that year over the forecast level. The area planted to winter and spring crops was 20 000 ha (almost 9 percent) less than had been planned. However, the enhanced yields resulting from the favourable weather conditions at the beginning of 2003 more than compensated for this shortfall, and production in terms of cereal and cereal equivalent was 82 000 t (21 percent) above expectations. Applied to the total annual production for the year 2002/03, these amended figures represent an overall production increase of 2 percent from a cropped area 1 percent smaller than had been predicted.

The Mission of 2002 did not include household garden production which, for 2003/04, has been estimated at 50 000 tonnes of cereal or cereal equivalent nationally (see 'Household gardens' section below). On the assumption that household garden production was similar in both years, this figure has been added to the 2002/03 total, bringing it to 3.969 million tonnes.

Amended figures incorporating these adjustments are given below in Table 2. In this report, comparisons with 2002/03 production refer to the amended figures.

Table 2: DPR Korea - Area ('000 ha) and production ('000 t) of food crops (Amended from report of October 2002)

Province	Main season crops, 2002										Winter/Spring double crops 2002/03								Total annual crops	
	Rice 1/		Maize		Potato 2/		Other cereals 3/		Total		Winter wheat		Spring barley		Spring potato 2/		Total 4/		Grand total 4/	
	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.
Pyongyang City	27	72	14	53	1	3	0.3	1	42	128	3	8	2	5	1	3	7	16	48	144
South Pyongan	98	239	61	215	7	20	2	2	168	476	7	21	6	13	15	40	28	74	195	550
North Pyongan	103	262	87	322	11	32	5	6	206	621	4	11	4	9	12	32	20	53	227	674
Jagang	7	15	37	119	1	5	5	9	50	148	0.1	0.2	0.1	0.1	3	7	3	7	53	155
South Hwanghae	150	394	80	308	16	50	5	5	251	757	19	50	11	24	21	60	51	134	302	891
North Hwanghae	48	117	69	228	5	15	1	1	123	361	12	26	6	11	15	34	33	71	156	432
Kangwon	36	70	37	95	3	7	1	2	76	173	5	11	2	3	9	20	16	34	92	208
South Hamgyong	60	129	48	154	7	21	9	15	124	319	4	9	2	3	21	48	27	60	151	379
North Hamgyong	25	51	47	104	12	34	3	6	87	196					2	4	2	4	89	200
Ryanggang	2	3	3	10	23	91	22	46	50	150									50	150
Kaesong	12	30	6	19	1	2	0.3	0.3	19	51	1	2	0.2	0.3	0.2	0.4	1	2	20	53
Nampo	15	40	7	24	3	6	1	1	25	71	3	7	1	3	1	3	6	13	31	84
Total	**583**	**1 421**	**496**	**1 651**	**89**	**285**	**54**	**95**	**1 222**	**3 451**	**58**	**145**	**34**	**71**	**99**	**253**	**211**	**518**	**1 433**	**3 969**

1/ Converted from paddy with a milling rate of 65 percent.
2/ Potato cereal equivalent of 25 percent.
3/ Includes sorghum, millets and summer wheat and barley.
4/ Area of 20 000 hectares and production of 50 000 tonnes for potatoes and green maize together (in cereal equivalent) from the kitchen gardens has been added to the winter/spring crops and to the total national figure. The production is net of seed requirement.
* Figures may not add-up exactly due to rounding.

4. FOOD CROP PRODUCTION IN 2003/04

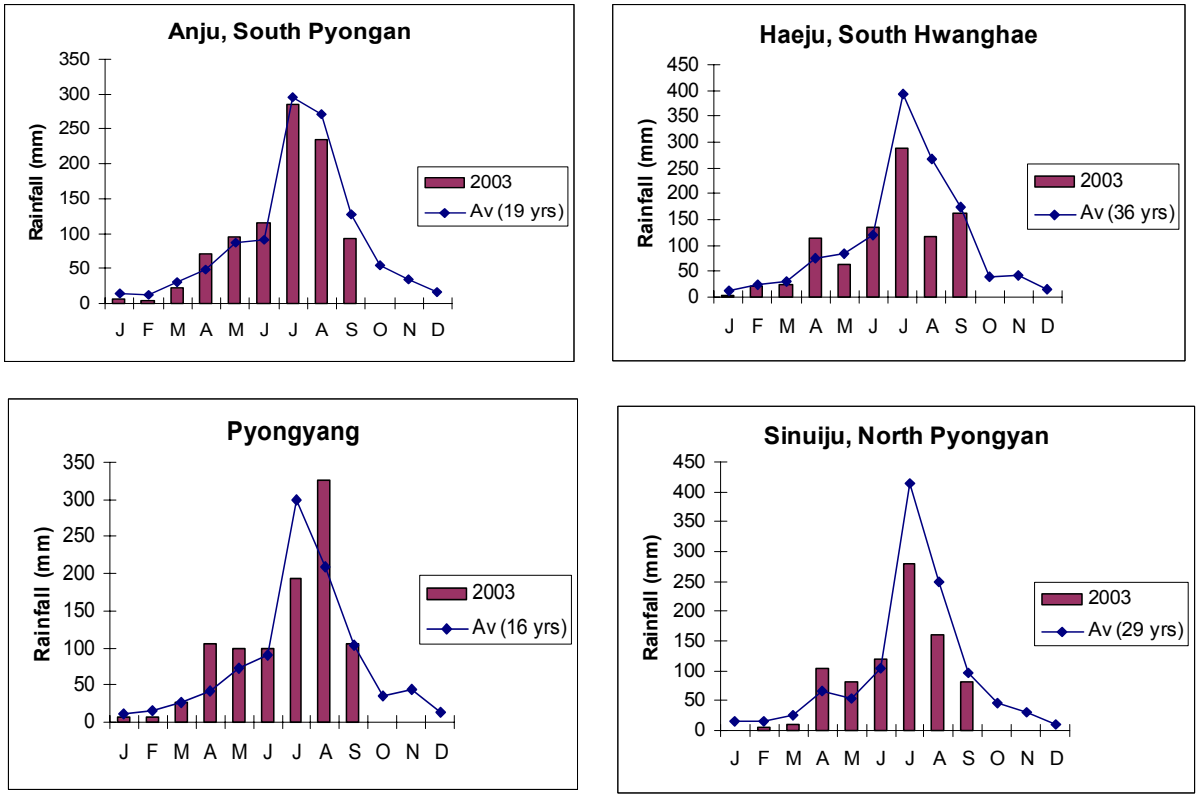
4.1 Climate

The Korean peninsula has a continental climate. Average temperatures in DPR Korea vary from -19°C in winter (Ryanggang in January, the coldest month) to 25°C in summer (South Hwanghae in August, the hottest month). The frost-free period ranges from 160 to 190 days, depending on altitude and latitude, and determines the length of the cropping season and choice of crops. Average annual rainfall varies from 600-980 mm in the north and north-east (Jagang, Ryanggang, North and South Hamgyong Provinces) to 880-1300 mm in the centre, south-west and south-east (North and South Pyongan, Nampo, Pyongyang, North and South Hwanghae, Kaesong and Kangwon Provinces). About 85 percent of all precipitation occurs during the spring-summer months, while 60 percent is distributed in June-September. Typhoons are a regular occurrence, the effects of which are felt at least once per growing season, usually in late summer or early autumn.

The early part of the 2003 cropping season benefited from satisfactory rainfall which was above average in many locations for April and May (see Figure 1). This was accompanied by generally favourable temperatures and sunny conditions. By the beginning of June, satellite imagery (FAO GIEWS) was indicating above-average levels of vegetation over most of the country, and this continued through July and much of August. Some parts of the country experienced localised problems with rainfall distribution during this period, but they were mostly minor. Towards the end of August, however, cloudier conditions prevailed and air temperatures, especially during the hours of darkness, fell below average for the time of year. The combination of cooler conditions and reduced sunshine hours continued through September into October, delaying maturation of the main-season crops by an estimated 7 - 10 days and reducing yield expectations. By the end of September, a large proportion of the paddy remained to be harvested, and some maize was still standing in the field. The cloudy, humid weather also tended to favour the spread of crop diseases such as leaf blight and blast of rice. Continuing rainfall into October could compromise final paddy production by increasing post-harvest losses in the field prior to the crop being removed for threshing.

DPR Korea was fortunate to avoid a typhoon in mid-September which caused considerable damage in the Republic of Korea. Some high winds and heavy rainfall were experienced along the coast of DPR Korea as a result of the typhoon, but damage was minimal.

Figure 1: Monthly rainfall in four different provinces of DPR Korea, 2003 and long-term averages



Sources: 2003 monthly average rainfall by Province – Ministry of Agriculture, DPRK and **Average Data –** FAOCLIM2 – World-wide agro-climatic database.

4.2 Area planted

Total land area in DPR Korea amounts to 122 543 sq. km, of which the total cultivated land area is estimated at 17-18 percent, or slightly in excess of 2 million hectares. Approximately 1.4 million hectares are considered suitable for cereal cultivation, 300 000 hectares are under vegetable crops, some 160 000 hectares under fruit orchards and a considerable area allocated to various other food and industrial crops such as mulberry, ginseng and tobacco. There is very limited scope for expanding cultivable areas. The Government has investigated the possibility of reclaiming some 300 000 hectares of tidal lands and another 200 000 hectares by terracing of mountainous areas. Due to the high cost involved, little progress has so far been made mainly in hill terracing. The ongoing land re-alignment exercise has increased the paddy production area by about 2 per cent.

Paddy

Paddy is now the most important crop of DPR Korea in terms of both area cultivated and production (though rice production, converted from paddy with a milling rate of 65 percent, is lower than that of maize). It is grown mainly in the central, south-western and south-eastern parts of the country (the lowland parts of North and South Pyongan, North and South Hwanghae, Pyongyang, Nampo and Kaesong, collectively known as the "Cereal Bowl") and the narrow east coastal strip comprising parts of Kangwon, and North and South Hamgyong Provinces. Smaller acreages are also cultivated in Jagang and Ryanggang Provinces.

Paddy is cultivated in the alluvial plains or on graded terraces equipped with irrigation control systems. The cultivated area has remained almost constant over the last decade. Paddy plots vary in shape and size. However, a province-by-province realignment operation has been under way during the past four seasons in order to improve the layout of paddies. In many of the plains in North and South Pyongan, Pyongyang, Nampo, Kangwon and South Hwanghae Provinces, smaller plots, generally varying in size between 0.25 and 0.5 hectares, have been transformed and re-aligned into well laid-out regular plots with uniform depth. According to the Ministry of Agriculture, land realignment has so far increased the overall paddy production area by 60 000 hectares.

In 2003, the area under paddy was reported as 593 390 ha, an increase of 1.8 percent over the previous year's area. In periods of severe water shortages, the paddy area may be reduced and subsequently planted with soya, or more drought-resistant crops such as sorghum and millet. However, this year, good utilisation of this expanded area was helped by the generally favourable rainfall and the improved electricity supply for irrigation pumping stations.

Maize

Maize, which is mainly produced under rainfed conditions, is more universally distributed than paddy. Until 1998, the area under maize amounted to some 630 000 hectares. Since then, however, the government has set lower maize planting targets in order to avoid expansion into lands with low potential. On such marginal lands, less water-demanding cereal crops and pulses have substituted maize while, on lands with higher potential, vegetables and main season potato have entered into the crop rotations. This year's area of 494 996 showed a very slight reduction compared with last year's area of 496 390 hectares.

Potato

Potatoes are grown as a spring (double) crop in the Cereal Bowl region, and as a summer crop in the cooler northern highlands (Jagang, Ryanggang), where a shorter growing season is experienced. As a double crop, potato is sown in March-April and harvested in June, while as a main crop it is sown in May-June and harvested in August-September. In response to the reduced productivity of the main cereals in the late 1990s, the land under potato was increased in all the major agricultural areas in an attempt to boost carbohydrate production. Availability of seed is the most important limiting factor to the expansion of the area under potato, as seed must be stored during the winter months, which can be particularly severe especially in the north of the country. Potato blight has also seriously affected crops in some areas, as has aphids infestation. The maximum cultivable area of spring and main season crops under present conditions is around 190 000 hectares. The areas under spring and main-season potato this year were 99 000 hectares and 89 000 hectares respectively. The area under spring potatoes in 2004 is expected to be similar to that of spring 2003.

Winter wheat and spring barley

Winter wheat and spring barley are produced in all provinces except Ryanggang and North Hamgyong. They were the main cereals in the Double-Cropping programme initiated in 1996 jointly by FAO and UNDP as part of the Government framework for agricultural recovery. The programme is considered, under present conditions, to be an effective strategy for enhancing food production. The aim of the programme is to utilise part of the agricultural land between October and June for winter and early cereal and potato crops which are then followed by maize and paddy from June to September. Efforts to increase the use of double-cropping have led to an expansion of the double-cropped area under winter wheat, spring barley and spring potato from 38 000 hectares in 1997 to more than 211 000 hectares in 2002/03 (an increase of almost 530 percent). Winter wheat is sown from the end of September to mid-October, immediately after the harvesting of the main-season crops. Factors influencing the area under winter wheat include autumn rainfall, timely availability of seed, and the availability of adequate farm power and labour at a time when the demand for labour is high for various other operations, especially the harvesting of paddy. Spring barley is sown in March. Both winter wheat and spring barley are harvested in the latter half of June. A further 19 percent expansion of the area under winter wheat from 57 700 hectares to 68 500 hectares is planned for 2003/04, while the area under spring barley in 2004 is expected to remain close to that of 2003.

Other crops

Other important crops produced in DPR Korea include summer wheat and barley, sorghum, millet, soybean, buckwheat, vegetables (mainly cabbage, spinach, radish, cucumber, eggplant and tomato) and fruit (mainly pears, peaches, apricots, apples and persimmons). Many farms also have sizeable mulberry plantations. The short agricultural growing season limits crop rotations and favours cereal mono-culture.

Summer wheat is grown in the higher-altitude parts of Jagang, Ryanggang, and North and South Hamgyong, where the growing season is relatively short.

The area under minor cereals and grains such as sorghum, various types of millet and summer wheat and barley in mountainous areas has increased this year from 54 000 hectares to 60 000 hectares, reversing last year's downward trend. The area under soybean, which is generally planted along the boundaries of paddy fields or intercropped with maize and/or sorghum appears to be increasing.

Household gardens

Each cooperative farm household is entitled to a private garden of 30 *pyong* or about 100 square metres. There are approximately two million such households in the country, constituting a total household-garden area of about 20 000 hectares. A typical pattern of cultivation in these gardens is an early crop of potatoes and green maize, followed by vegetables such as cabbage, peppers, radish and garlic. The productivity of these plots is generally better than the average achieved on cooperative farms.

Crop production on sloping land

Agricultural land in DPR Korea is distributed amongst 3 295 co-operative and state farms. However, persistent shortages of domestic fuel and food have led, in recent years, to the removal of fuel wood from sloping land and the subsequent cropping of that land. Cropping on such steep slopes has led to the erosion of fragile soils in many areas.

In the past, crop and food-supply assessment missions have not taken account of crop production on land with slopes of more than 15 percent, where timber has been removed for household fuel. Such cultivation is technically illegal, but the authorities turned a blind eye to it in the late 1990s when domestic food production was especially low and families faced severe hardship. The practice is said to be diminishing now, and reforestation is being extensively carried out. Nonetheless, slope cultivation is still very evident in many parts of the country. It would be difficult to estimate the contribution that crop production from sloping land makes to the overall national total, but the Government has indicated that it will attempt to do so in the coming year. Individual estimates based purely on observation in North Hamgyong and Ryanggang provinces suggest that slope cultivation should add about 30 percent and 20 percent respectively to the officially recorded cultivated areas of these provinces. However, yields (of maize and potatoes) on the slopes may be as low as 25 percent of those achieved on the flat land of the cooperative farms, meaning that the sloping land's contribution to production would be an additional 5 to 8 percent of mainly maize. In the absence of quantitative information, and in anticipation of an estimate from the Government next year, the Mission has not included this land in the national production calculation for this 2003/04.

Livestock

Numbers of goats, rabbits and poultry rose again this year but numbers of pigs and draught cattle on cooperative farms remained fairly static in response to the continuing shortage of feed. Stocks of pigs on most cooperative farms are maintained for the purpose of breeding in anticipation of a future improvement in the feed situation. However, the number of pigs in private ownership appears to have risen as a result of the market accepting a measure of liberalization, with piglets representing a source of household income.

Table 3: DPR Korea - Livestock population, 1996-2003 ('000 head)

	1996	1997	1998	1999	2000	2001	2002	2003	% change	
									2003 over 1996	2003 over 2000
Draught cattle	615	545	565	577	579	570	575	576	-6	-1
Pigs	2 674	1 859	2 475	2 970	3 120	3 137	3 152	3 178	+19	+2
Sheep	248	160	165	185	185	189	170	171	-31	-8
Goats	712	1 077	1 508	1 900	2 276	2 566	2 693	2 717	+282	+19
Rabbits	3 056	2 740	2 795	5 202	11 475	19 455	19 482	19 576	+541	+71
Chickens	8 871	7 547	8 965	10 371	14 844	15 804	17 259	18 711	+111	+26
Ducks	1 098	822	1 372	1 624	2 078	3 158	4 189	4 613	+320	+119
Geese	554	357	462	829	889	1 090	1 247	1 247	+125	+40

4.3 Means of production and inputs

Planting material

In DPR Korea, suitable paddy and hybrid maize seed, produced by specialised cooperative or state farms, is provided on credit each year to producer cooperative farms through the Government's distribution system. This year, seed was available on time, and correct sowing dates were observed.

Paddy is typically planted in nurseries at the beginning of April and transplanted in late May or early June. Seed rates are high at 150 kg/ha, purportedly to compensate for low soil fertility. The availability of plastic sheeting to protect nursery seedlings from low temperatures and desiccating winds was similar to that of last year. However, the weather conditions this year were more benign, with better rainfall and slightly higher temperatures. Varieties are selected to complement the conditions of the soil in which they will be grown. Consequently in recent years varieties of rather lower yield potential have been grown, reflecting the below-optimum fertility status of most soils and the possibility that they may have to contend with adverse soil-moisture conditions during the growing season.

Hybrid maize is planted at between 40 and 50 kg/ha, giving a plant population of 35 000 - 50 000 per hectare.

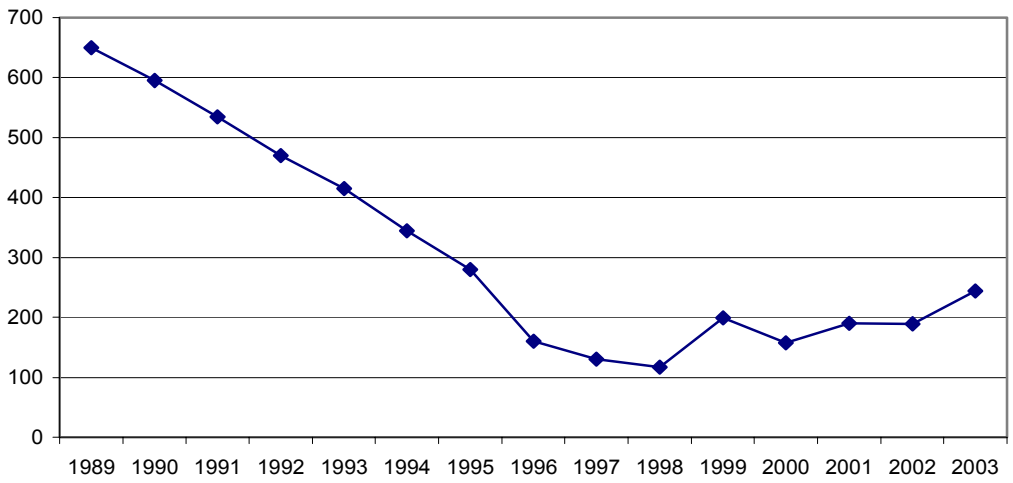
Potato planting material in DPR Korea is usually of poor quality and seeding rates are lower than recommended because of supply shortages. The practice of cutting tubers into four pieces for seed not only depresses yield but also encourages disease infestation. These shortcomings are reflected in the low yields obtained - about 10 t/ha fresh weight nationally for the spring crop and 12 t/ha fresh weight for the main crop.

Sufficient seed for planting the planned area of winter wheat is said to be available. The nationally recommended seed rate for both wheat and barley is 150 kg/ha/

Fertilizer

According to the Ministry of Agriculture, 244 512 nutrient tonnes of fertilizer were used in agriculture in DPR Korea during 2003, compared with only 189 000 tonnes in the previous year. Most was provided as humanitarian assistance by the Republic of Korea, the European Union, FAO and various NGOs. Just over 32 000 nutrient tonnes were produced in the country, and 37 706 nutrient tonnes were imported commercially. Of the total used, 68 percent was nitrogen, mostly in the form of urea; 15.5 percent was phosphorus; and 16.5 percent was potassium. All farms visited by the Mission reported using higher fertilizer application rates this year than they had done for several years, and on average about 10 percent higher than in 2002. Farms cited this as the main reason for increased yields. Typical fertilizer application rates this year in the Cereal Bowl provinces ranged from 380 to 500 kg ammonium sulphate equivalent per hectare of paddy (about 165 to 215 kg per hectare of urea, the most commonly used product), with slightly lower rates for maize.

Figure 2. DPRK. Consumption of NPK, 1989 - 2003 ('000 nutrient tonnes)



The policy of the Government regarding fertilizer distribution is based on two main principles. It should be equitably distributed, and, within the constraints of availability, it should be allocated according to each area's production potential. If, therefore, fertilizer is given by a donor for use in a particular province, the Government will adjust that province's allocation from the national pool according to its guiding principles. The use of fertilizer by province during 2003 is shown in Table 4.

Table 4: DPR Korea - Use of fertilizer (nutrient tonnes) by province, 2003

Province	N	P	K
Pyongyang City	5 615	1 297	1 392
South Pyongan	23 502	5 254	5 644
North Pyongan	26 558	6 199	6 528
Jagang	6 296	1 480	1 072
South Hwanghae	36 088	7 902	8 584
North Hwanghae	19 711	4 490	4 912
Kangwon	10 597	2 393	2 657
South Hamgyong	17 317	3 965	4 320
North Hamgyong	10 665	2 524	2 588
Ryanggang	5 986	1 424	1 458
Kaesong	473	116	137
Nampo	3 630	831	907
Total	**166 438**	**37 875**	**40 199**

Pest and disease control

This year saw some outbreaks of water weevils in paddy. The pest was reported to be present over an area of about 400 000 ha and to have affected yield in 150 000 ha in North Hwanghae, Pyongyang City and Nampo provinces. Damage, however, was limited in most cases by temporarily draining the paddy fields. Leaf rollers were also present and their incidence was reported as being above average in many locations. Control measures included spraying with Nubacuron. Stem borers, generally present at normal levels, were often controlled using night-lights and parasitic bees. Sheath blight was widespread, and was encouraged by the cloudy, humid conditions late in the season. Some local instances of neck blast (where the crop had been temporarily submerged or subjected to particularly humid conditions) and smut were observed.

The main pest problem faced by maize this year was attack by stem borers, though some instances of cutworms at the seedling stage were also reported. Stem borers were effectively controlled using night-lights and parasitic bees. A root and stem rot was also reported at several locations.

Potato was not reported to have been subject to exceptional pest or disease pressure this year.

DPR Korea depends on imports and assistance for its phytosanitary chemicals. According to the Ministry of Agriculture the country imported or received 50 000 litres of deltamethrin, 18 tonnes of quinchloride, 20 tonnes of NC-311, 50 tonnes of butachlor, 140 tonnes of MZ-965, 176 tonnes of nubacuron and 18 tonnes of MTS in 2003. Increasing interest is being shown in integrated pest management (IPM) from both the economic and the environmental point of view, and FAO has recently been involved in encouraging its use.

Farm power

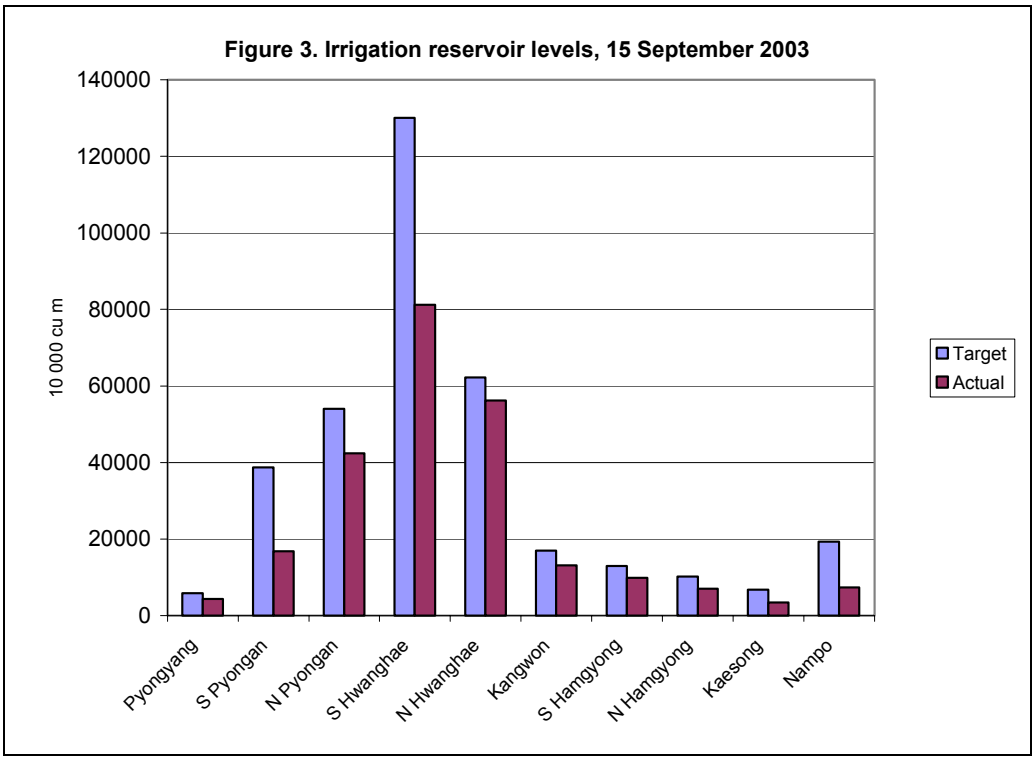
The use of farm power has increased this year. 57 percent of the country's 64 225 tractors are now reported to be operational as a result of enhanced availability of fuel, tyres and spare parts, compared with 55 percent last year. However, most functioning tractors are extremely old. It would appear that about half of the land preparation in the Cereal Bowl provinces must still be done using draught cattle, although some farms report that as much as 70 percent of their cultivations are carried out by tractor. Farms also report a slight improvement in power supplies this year, which is especially important for pumping-stations and threshing.

Irrigation

Although some irrigation is by gravity feed, most systems depend on electrically powered pumping stations. Some farms depend for their irrigation on series of ten or more pumping-stations and are consequently very vulnerable to water shortages. This year the power supply improved so there were fewer stoppages. In addition, rainfall was reasonably well distributed, with the result that stoppages were less serious than they might otherwise have been. Water levels in the country's reservoirs have been satisfactory, and by September 2003 were at 68 percent of capacity, significantly higher than last year (see Figure 3).

The country's long-term irrigation situation continues to improve. The 148 km Pyong-Nam Waterway in South Pyongan Province was recently completed, and the construction of two similar waterways (North Pyongan, North Hwanghae-Kangwon) has started. These are all gravity systems, which will be linked up to the existing network, thus reducing the need for pumping-stations.

Figure 3. Irrigation reservoir levels, 15 September 2003



4.4 Yield and production

Production parameters of food crops in DPR Korea for 2003/04 are presented in Tables 5, 6 and 7. Main-crop estimates (rice, maize, potato and other cereals including summer wheat, sorghum and millet in Table 5) are based on a combination of Government estimates, on-farm discussions, field observation, and discussions with other agencies involved in crop production. Winter and spring crop forecasts for 2003/04 (to be harvested in 2004, shown in Table 6) are based on a combination of Government target crop areas, on-farm discussions and recent reported yields. Table 7 gives the sum of area and production of main crops, winter and spring crops, and household garden production (see above).

Paddy

This year's national paddy yield, at about 3.85 tonnes per hectare, was slightly higher than that of last year at 3.75 tonnes per hectare. Positive factors affecting yield included good weather early in the season, increased use of fertilizer, better power supplies and improved mechanization, while negative factors included cool, cloudy weather late in the season and some pest and disease damage. A small increase in area coupled with slightly better yield leads to an estimation of paddy production this year of 2.284 million tonnes, an increase over last year's production (2.186 million tonnes) of 4.5 percent. Assuming a milling ratio of 65 percent, this equates to 1.484 million tonnes of rice.

Maize

Average maize yields this year were 3.48 tonnes per hectare, an increase of 4.5 percent over last year's average yield of 3.33 tonnes per hectare. Factors contributing to the better yield included good weather at the beginning of the season, low incidence of pests and diseases, increased fertilizer use and more farm mechanization. Being harvested earlier than paddy, maize was less affected by the cool, cloudy weather of September. National maize production this year is estimated to be 1.725 million tonnes. The area under maize this year was very similar to that of last year so all extra production (74 000 tonnes) can be attributed to increased yield.

Potatoes

Main-crop potato yields were slightly higher this year than last at 3.20 tonnes cereal equivalent per hectare (about 12.8 tonnes fresh weight per hectare). This low level of productivity appears to be attributable mainly to poor-quality seed. National production of main-crop potato in cereal equivalent is estimated to be 285 000 tonnes.

Other cereals (sorghum, millets and summer wheat and barley) which are grown on less than 5 percent of the total area showed considerable increase in both area and yield this year compared to the last.

Table 5: DPR Korea - Main-season crop production, 2003 (Area in '000 ha, yields in t/ha and production in '000 tonnes)

Province	Rice 1/			Maize			Main-crop potato 2/			Other main-season cereals			Total	
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Prod.
Pyongyang City	27	2.5	67	14	3.6	50	1	2.8	2	0.5	2.0	1	42	121
South Pyongan	98	2.7	262	61	3.8	233	7	3.3	22	3	1.6	5	169	522
North Pyongan	103	2.6	268	87	3.8	331	11	3.0	33	5	1.8	10	206	642
Jagang	7	2.2	15	37	3.2	117	2	3.3	5	5	1.9	10	50	148
South Hwanghae	150	2.7	410	80	4.1	328	16	3.3	52	4	2.7	11	250	801
North Hwanghae	58	2.3	132	73	3.2	234	6	3.0	18	3	2.8	9	140	393
Kangwon	36	2.1	74	37	2.9	106	3	2.8	8	2	1.2	3	78	191
South Hamgyong	60	2.2	133	48	3.3	158	7	3.0	22	9	2.3	21	124	334
North Hamgyong	25	2.1	52	47	2.8	132	12	3.0	36	4	2.2	8	88	227
Ryanggang	2	1.6	3	3	2.5	9	22	3.5	79	22	2.3	50	50	140
Kaesong	12	2.4	29	1	3.3	3	0.1	2.9	0.3	0.2	1.3	0.3	13	32
Nampo	16	2.5	38	7	3.4	24	3	3.2	8	1	1.2	1	26	72
Total	**593**	**2.5**	**1 484**	**495**	**3.5**	**1 725**	**89**	**3.2**	**285**	**60**	**2.2**	**129**	**1 237**	**3 623**

1/ Milling rate 65 percent 2/ Potato production is given in terms of cereal-equivalent; 1 tonne potato = 0.25 tonne cereal.
* Figures may not add-up exactly due to rounding.

Table 6: DPR Korea - Forecast of winter and spring double-crop production, 2003/04 1/ (Area in '000 ha, yield in t/ha, and production in 000 t)

Province	Winter wheat			Spring barley			Spring potato 1/			Total 2/	
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Prod.
Pyongyang City	3	2.5	8	1	2.1	3	1	2.7	2	5	13
South Pyongan	11	2.5	28	6	2.1	13	20	2.7	55	37	96
North Pyongan	13	2.4	32	10	2.1	20	19	2.6	50	42	102
Jagang	1	2.1	1	0	1.7	1	1	2.3	3	2	5
South Hwanghae	18	2.5	46	9	2.1	18	19	2.8	53	46	116
North Hwanghae	9	2.2	19	4	1.9	8	11	2.4	26	24	53
Kangwon	4	2.1	9	1	1.8	2	7	2.3	15	12	26
South Hamgyong	5	2.0	10	2	1.7	3	15	2.4	35	22	48
North Hamgyong	0.5	2.0	1	0.2	1.7	0.4	4	2.2	8	4	9
Ryanggang											
Kaesong	1	2.2	1	0.3	1.9	1	1	2.3	2	2	4
Nampo	3	2.2	6	1	1.9	2	1	2.3	3	5	10
Total	**69**	**2.4**	**161**	**34**	**2.0**	**70**	**98**	**2.6**	**251**	**221**	**532**

1/ Potato production is given in terms of cereal-equivalent; 1 tonne potato = 0.25 tonne cereal.
2/ Household garden production of 50,000 t of cereal and cereal-equivalent from 20 000 ha is included in this national total. The production from household gardens is net of seed requirement.
* Figures may not add-up exactly due to rounding.

Table 7: DPR Korea - Total food crop production forecast for 2003/04, including household garden production. (Area in '000 ha; production in '000 t.)

Province	Total	
	Area (000 ha)	Production (000 t)
Pyongyang City	47	134
South Pyongan	207	618
North Pyongan	248	743
Jagang	52	152
South Hwanghae	296	918
North Hwanghae	164	446
Kangwon	90	217
South Hamgyong	146	382
North Hamgyong	92	236
Ryanggang	50	140
Kaesong	15	36
Nampo	31	82
Household gardens	20	50
Total	**1 459**	**4 156**

***** Figures may not add-up exactly due to rounding.

Table 8 gives the area, yield and production of cereals and potato in cereal equivalent for the marketing year 2003/04 (Nov.-Oct.) and comparison with the previous year. Production of winter/spring crops to be harvested in 2004 is forecast as explained above.

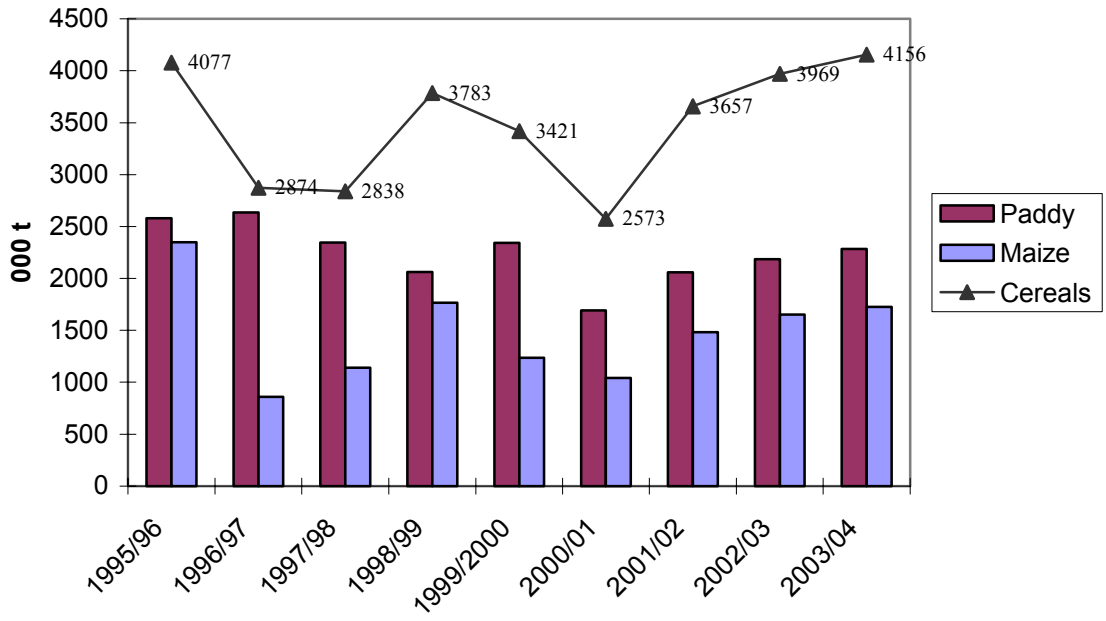
Table 8: DPR Korea - Area, Yield and Production, 2003/04 as compared to 2002/03 (area in '000 hectares, yield in tonnes/hectares and production in '000 tonnes)

Crop	2003/04			2002/03			% Change in 2003/04 over 2002/03		
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.
Main Season Crops:									
Rice1/	593	2.50	1 484	583	2.44	1 421	1.8	2.6	4.5
Maize	495	3.48	1 725	496	3.33	1 651	-0.3	4.8	4.5
Other cereals 2/	60	2.15	129	54	1.76	95	11	23	36
Potatoes 3/	89	3.20	285	89	3.20	285	0.1	0.3	0.3
Total	**1 237**	**2.93**	**3 623**	**1 222**	**2.82**	**3 451**	**1.2**	**3.7**	**5.0**
Winter/Spring Crops: 4/									
Wheat	69	2.35	161	58	2.49	145	18.1	-5.6	11.5
Barley	34	2.03	70	34	2.09	71	1.4	-2.7	-1.3
Potatoes3/	98	2.56	251	99	2.55	253	-0.8	0.3	-0.5
Household gardens 5/	20	2.50	50	20	2.50	50	0	0	0
Total	**221**	**2.41**	**532**	**211**	**2.45**	**518**	**4.8**	**-1.9**	**2.8**
Total cropped area and production	**1 459**	**2.85**	**4 156**	**1 433**	**2.77**	**3 969**	**1.8**	**2.9**	**4.7**

1/ Converted from paddy with a milling rate of 65 percent.
2/ Includes sorghum, millets and summer wheat and barley.
3/ Potato cereal equivalent of 25 percent.
4/ Based on forecast for 2003/04 and revised estimates 2002/03 double cropping season.
5/ Includes production of potatoes and green maize (cereal equivalent). The production is net of seed requirement.
* Figures may not add-up exactly due to rounding.

Figure 4 shows total cereal production (including rice in milled form and potato in cereal equivalent) from 1995/96 to 2003/04. Potato production has gained prominence in recent years in DPRK and it has been added to the total from 1998/99 onwards. Long term production levels show a negative trend between 1995/96 and 2000/01 with a steady recovery since then.

Figure 4. DPR Korea. Paddy, maize and total cereal production. 1995/96 - 2003/04



5. FOOD SUPPLY/DEMAND OUTLOOK, 2003/04 (NOVEMBER - OCTOBER)

5.1 Cereal supply/demand balance, 2003/04

A cereal supply/demand balance sheet for the country from November 2003 to October 2004 is presented in Table 9. In preparing the balance sheet, the following assumptions were made:

- A population of 23.62 million by April 2004, the middle of the 2003/04 marketing year, obtained by applying an annual growth rate of 1 percent per annum to the estimate of 23.08 million at the end of 2001.
- A consumption requirement of 167 kg/caput of cereals (including potato in cereal equivalent), which represents about 1 600 Kcal, or 75 percent of the average person's daily energy requirement of 2 130 Kcal.
- A seed requirement based on the seed rates used in DPR Korea and the intended area to be sown in 2003/04, *viz.*

    - Paddy: 150 kg/ha (97.5 kg or rice) on 593 000 ha
    - Maize: 45 kg/ha on 495 000 ha
    - Wheat and barley: 200 kg/ha on 163 000 ha
    - Potato: 625 kg cereal equivalent/ha (= 2.5 t/ha) on 187 000 ha

    (The area under household gardens has not been included in the seed-requirement calculation.)

- Post-harvest losses of 15 percent. The level of post-harvest crop loss in DPR Korea has been a contentious issue in recent years, with estimates ranging from 2 percent to as high as 30 percent.

Unfortunately, none is based on quantified investigation. There are many stages at which significant loss can occur. In the case of paddy, if the harvest is delayed there may be some shattering in the field. Immediately after harvest, crops are left to dry in the field; if the paddy field has not been sufficiently drained or if there is substantial rainfall following the harvest, the crop may be left lying in damp conditions which are conducive to rotting. Delayed collection of the crop from the field leaves it susceptible to rodent and insect damage. Losses may occur while the crop is being transported from the field to the thresher. Old or inefficiently set threshers may cause loss. Delays in threshing (which are very common as a result of power shortages) can cause losses in the paddy stored on the stalk. Finally, after threshing and bagging, losses may occur in storage. It appears that a great deal of care is taken of the crop at all stages and that losses are minimised insofar as circumstances allow. However, there are several uncontrollable variables such as rainfall and power supply which can thwart farmers' best efforts. The Mission recommends that a study be undertaken to quantify losses at each vulnerable stage. In the meantime, and in the absence of any better estimate, the Mission continues to use the figure of 15 percent as in previous years.

- Other uses at 3 percent of the total availability.
- A feed-grain requirement of 178 000 tonnes, as provided by the Ministry of Agriculture.
- A paddy-to-rice milling ratio of 65 percent.
- A commercial import capacity of 100 000 tonnes.

Table 9: DPR Korea - Cereal (and cereal-equivalent) 1/ balance sheet for 2003/04 (Nov/Oct) in '000 t

DOMESTIC AVAILABILITY	**4 156**
Stock drawdown	0
Domestic production	4 156
- Main-season production	3 623
- Winter/spring production	532
TOTAL UTILIZATION	**5 100**
Food use	3 944
Feed use	178
Seed requirement	230
Other uses and post harvest losses	748
IMPORT REQUIREMENT	**944**
Commercial import capacity	100
Concessional imports 2/	300
Emergency food aid received or pledged 3/	140
Uncovered Deficit	**404**

1/ Including potatoes in cereal equivalent.
2/ Rice imports on loan from the Republic of Korea.
3/ Includes an estimate of 100 000 tonnes from China.
* Figures may not add-up exactly due to rounding.

The total cereal import requirement in 2003/04 is estimated at 944 000 tonnes, slightly lower than last year (972 000 tonnes). During the past seven years (1995/96 to 2001/02) the cereal import requirement (or national food deficit), has been in excess of 1 million tonnes, reaching over 2 million tonnes during 2000/01, the year of the worst harvest. Over the last three years the gap is narrowing, but it is still close to a million tonne mark. In anticipation of another offer of rice on loan by the Republic of Korea as in previous years, the table lists 300 000 tonnes as concessional imports for the coming marketing years. Food aid expected to be in stock or to arrive after 1 November 2003, is estimated at 140 000 tonnes of cereals. Thus, the uncovered deficit is 404 000 tonnes of cereals which needs to be met through additional external assistance.

5.2 Food aid needs and role of food assistance

Household food security

In October 2002, the Government of the DPRK, in cooperation with UNICEF and WFP, carried out a nutrition survey in seven provinces and three cities which covered children under 7 and their mothers. The survey indicates a considerable improvement in the general nutritional status of children since the last

survey was carried out in 1998. Among the surveyed children the prevalence for wasting (weight/height) fell from 15.6 percent to 8.1 percent. Child underweight (low weight-for-age) fell from 60.6 percent to 20.1 percent and stunting (height-for-age) fell from 62.3 percent to 39.2 percent. Although this reflects a major improvement, the individual values are still alarmingly high. For instance, the prevalence of stunting higher than 30 percent is considered by WHO to be a severe public health problem[3].

The availability of basic food and food items that allow for a more balanced diet remains inadequate, even with the expected improvement in cereal production figures. More important, however, is the fact that the purchasing power of many households, already inadequate to buy the food they need in terms of quantity and nutritional diversity, has further deteriorated. Continued targeted food aid interventions are therefore called for to prevent a slippage towards the previous malnutrition levels. Lack of access to micronutrient rich food is a major concern, and the possibility of providing more fortified food to children under WFP's Local Food Production (LFP) programme should be explored.

General trends

The Mission confirms that urban populations remain the most vulnerable. Recent food economy analyses undertaken by WFP found that half of the interviewed PDS-dependant households were not able to cover their daily calorie requirements, and the large majority of them had a very low protein intake. There are signs that, in particular, industrial workers' households have become more vulnerable over the past 12 months, and may continue to worsen in the short to medium term. This development, also predicted by the 2002 CFSAM, appears to be an initial effect of the economic policy adjustment process implemented in July 2002[4], combined with a critical lack of energy and raw materials.

The introduction of the economic policy adjustment should, in principle, be a positive first step to improve the overall efficiency of the economy. However, it would be unrealistic to expect that all would benefit equally from it in the early phases, and more likely that some population groups might actually see an immediate worsening of their situation. Although the incidence of this phenomenon could not be broadly quantified, the Mission's impression from general discussions with officials and from family visits is that a sizable number of these households are more or less adversely affected[5]. Due to the inability of many factories to pay the full wages as a result of their low output or sales, and the proportionally steep increase in PDS and market prices compared with the increase in wages, it is especially the workers' households with one income earner and with many dependents that find it difficult to cope. The situation is worse for households whose members are not receiving supplementary assistance from WFP under the current emergency operation[6].

The deteriorating situation in the food security of PDS-dependant households is believed to be more serious in the northern and north-eastern provinces. Due to the predominantly industrial and/or mining base of their economies, there are likely to be considerably larger numbers of workers in inefficient factories who cannot easily be absorbed by the more efficient ones, and whose incomes, and thus their food-purchasing power, will be at a lower level for a longer period than in other regions.

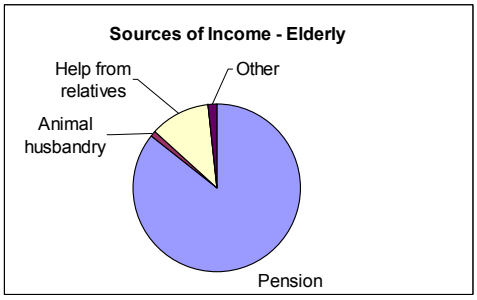
Access to basic food: Public Distribution System (PDS)

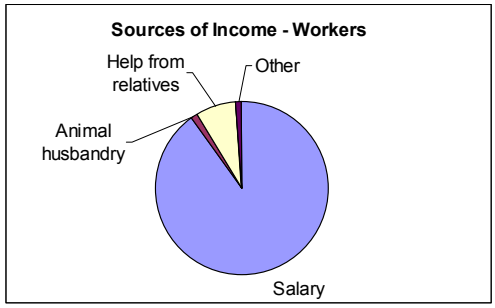
The PDS is the system through which the Government channels basic food rations at a fixed price to each member of non-farming households. The Government purchases the food from cooperative farms, and through the transfer of food from surplus producing counties to deficit counties, it aims to ensure that individual rations are the same throughout the country. The Government's long-term target for an individual ration through the PDS remains at 575 grams per person per day but, as in previous years, the estimated rations and actual achievements are much lower. The Government's plan for the 2002/2003 marketing year was 270 grams. The actual average through September 2003 was 319 grams (18 percent more than the planned figure), reportedly because of the concessional loan of 400 000 tonnes of rice that the country has received from the Republic of Korea (ROK)[7].

[3] WHO/SEARO Appendix 2. Nutrition in South-East Asia. World Health Organization SEARO 2000.
[4] These effects should be eliminated once the more efficient industries are able to absorb the workforce from under-productive ones.
[5] Percentages ranging between 30 percent and 50 percent of PDS-dependant households were mentioned.
[6] Kitchen gardens and help from relatives give some relief, but production from kitchen gardens is marginal in terms of daily needs and, while help from farmer relatives is regular, it is estimated to provide less than 5 percent of households' energy requirements.
[7] Most counties reported that the PDS ration is the same for each individual household member, but some said that they were averages, and that different rations are given to recipients according to their age and the hardship of their job.

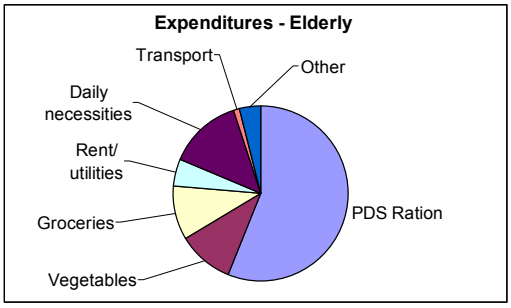
However, this ration only provides around half of the kcal requirements of a workers' household. For 2003/2004 the Government estimates that a daily ration of 300 grams can be provided, except for part (June-July) of the lean season (April – August/September), when it will most likely be 250 grams unless there is another sizable loan or a significant increase in commercial purchases.

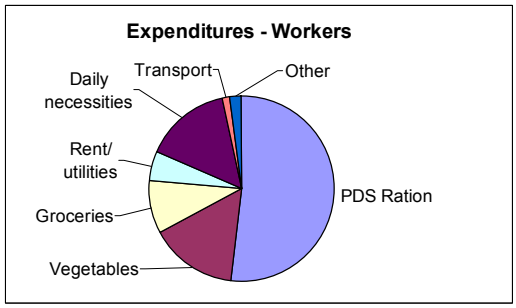
The analysis of WFP's interviews with farmers', workers' and pensioners' households, as well as with groups of representatives of such households in Focus Group Discussions (FGD), indicates that apart from wages and pensions, there are very few other sources of income available to urban households (see chart below).





The analysis also shows that on average those workers and elderly spend 70 percent to 80 percent of their total (full) income on food, of which 50 to 60 percent on food from the PDS alone. The expenditures on PDS food as percentage of overall food expenditures represent a steep increase compared to the situation before the economic policy adjustment, when the prices of PDS food were increased disproportionally compared with wages[8]). This means that these workers have now less income available to supplement their basic food supplies.





The problem that many urban poor face is that the cash income that is left after paying for the basic PDS ration and daily non-food necessities is insufficient to buy enough food due to the high prices on the consumer markets. Nevertheless, a family of four (husband, wife, baby and a mother-in-law) with a combined income of 5000 Won/month, and with supplementary assistance from WFP for the nursing mother, is able to purchase on the consumer market the additional quantity of rice it needs each month to complement their energy needs (as well as some other food items), even though the prices are three times as high as those at the PDS. Without the supplementary WFP assistance, however, this family would not be able to purchase the required additional full amount of rice, let alone the more nutritious food items. The situation is bleaker for a one-income earner household with two children, that spends 65 percent of its 2000 Won/month income to buy the PDS cereals ration and that does not have enough cash to buy supplementary cereals, let alone nutritious food items, on the consumer markets. The same applies to an elderly person who lives alone and has no or little help from relatives.

[8] With the introduction in July 2002 of the economic policy adjustment PDS prices increased 35 to 50 times, but wages only around 20 times (ref. paragraph 2.3). Industrial workers' salaries vary from 1 500 to 3 000 Won per month. The average is around 2 100 W/month for a full, regular salary. Doctors, miners, engineers, and workers in the more efficient heavy industries earn more (their salaries range from 3 000 to 8 500 W/month, and are likely less affected by the economic adjustment (workers in the more efficient industries stand to actually benefit from it). The average pension is 700 – 1 000 W/month.

The problem is compounded by the reported problems that factories currently face in paying full wages. Government officials and beneficiary families interviewed indicated that many factories and counties are currently able to pay only 50 percent to 80 percent of the regular salaries. This may be a transitory effect of the economic reforms. Under these circumstances, more PDS-dependant people have become vulnerable.

The situation is especially precarious for pregnant and nursing women, as well as young children, as households will have less cash available to purchase foods for their special dietary needs. Also many elderly without supplementary assistance from relatives continue to be vulnerable in view of their insufficient pensions. Continued assistance to these WFP core groups is therefore essential to avoid a reversal of the positive trends in nutrition levels recently observed.

Supplementary sources of food

- State shops and consumer markets

State shops sell items such as sugar, oil, salt and bean paste. In early 2003 the Government allowed free trade of consumer goods in farmers markets (now called consumer markets). The Mission was not able to visit state shops and consumer markets, but the impression is that state shops' stocks are not sufficient to meet the demand. An indicator for this is that Government gives purchase priority to the most vulnerable groups when supplies are too low; and that there is a limit to each person's purchase allowance.

Collected information indicates that prices in markets are too high to enable families to adequately supplement their diets. Prices for rice and maize are reportedly 3 and 3.5 times as high as the PDS prices, and about double the 2002 market levels, indicating a steep erosion of the already low purchasing power. From interviews conducted by WFP with the households mentioned above, it was learned that the more vulnerable categories (workers and elderly) can only afford to buy condiments and some vegetables, whereas farmers mostly buy fish and condiments, i.e. they can afford to buy more nutritious food than PDS-dependant workers and pensioners. More information on market supply and prices is needed for a better understanding of the food security situation of various household categories, but the above is indicative for the status of PDS-dependant urban households.

- Kitchen gardens

Information collected by WFP/DPRK during 2002 and 2003, and information provided to the Mission by officials and families interviewed, indicate that around half of PDS-dependant households have a kitchen garden; households in the central areas of the larger cities do not have access to kitchen gardens. Kitchen gardens have an average size of 10 to 11 pyong (= 33 to 36 sq meters), and are mostly used to grow potatoes, maize, vegetables, pumpkins, and some soybeans. PDS-dependant households consume their entire produce themselves. A 10 pyong garden provides about 8,000 kcal per month to the household. At an average household size of four, this represents only about 3 percent of the total daily energy needs of the household members. The produce also increases the access to nutrients, although marginally. A quarter of the interviewed households also had a few chickens or a pig.

- Additional food sources

People gather mountain food or edible grasses during part (April – June) of the lean season; from September they supplement their diets by gathering nuts, mainly acorns and pine nuts. However, the additional food availability for a household is marginal; it only provides an average of 5 percent of individual requirements.

Farmers

As in previous years, the Government allocated an annual quantity of 219 kg of milled cereals per member of cooperative farm households during 2002/03. This will be maintained for 2003/04. This represents a daily ration of 600 grams per person. In addition, farmer households receive a share of the sale proceeds of the cooperative farm, proportionate to each working household member's working days during the year. These amounts vary across the country as not all farms are able to produce equal quantities in excess of their members' allocations, and the amount can be substantially lower than worker's salaries. Nonetheless, farm households are still better off than households of PDS-dependant workers and officials' in terms of access to food, as their cereal rations are substantially higher. In addition, virtually all cooperative farm households have kitchen gardens of about 30 pyong (100 m^2), three times the size of the kitchen gardens of PDS-dependant households. This enables them to produce food for their own consumption as well as for sale in the consumer markets and to support relatives in urban areas. They also have more livestock and small animals than urban populations.

Overall, farmer families have better access to food. Whereas it is likely that some individuals are less well off than others (for instance those who were unable to work a sufficient number of days to earn a reasonable cash income), they do get their full food allocation, have a larger kitchen garden, more livestock and small animals; and their social environment will be better able to help if there is a need. However, according to the 2002 nutrition survey, pregnant and nursing women in farm families are equally vulnerable to malnutrition as urban women and thus should receive supplementary food assistance to ensure their dietary needs.

Food aid needs and the targeting of food assistance

There is a continued need for food assistance to the beneficiary categories currently assisted by WFP to prevent a deterioration in nutrition levels. In view of their special nutritional needs[9], children in orphanages, kindergartens and nurseries, primary school children, and pregnant and nursing women should continue to form the core of WFP's beneficiaries. Another category of beneficiaries, the elderly with little or no support from relatives, should also remain a core category.

Special attention should also be given to the low income PDS-dependants in highly urban areas who may have been recently displaced or under-employed due to the effects of the economic reforms. One mechanism would be to directly target these people and to provide them with WFP food through the PDS. Selection could be made on the basis of household data related to their wages and household size that are available at county level. An alternative mechanism would be an expansion of the current FFW programme, under which participants are selected from among workers in under productive factories. Officials met during the mission confirmed that many more workers could be mobilized. However, the difficulty of identifying adequate schemes may be a constraint (especially in urban areas); and there would be a risk that people who are not physically able for such work would be left out. The Mission recommends an initial, relatively modest, programme using a combination of free distribution through the PDS and an expansion of FFW activities in urban areas. Criteria need to be developed to select the beneficiaries under each of these, and to that end WFP needs verifiable data on incomes, prices, family size and other information to complete its Household Food Economy Analysis. The Mission noted and greatly appreciated the improved openness of the Government to discuss and provide such information. The Mission hopes that this will further improve WFP's knowledge of the urban poor, which would be the basis for a possible expansion of this new component of the emergency operation.

[9] Although difficult to quantify, the potential effect of a drastic reduction in food assistance to the current beneficiary groups was indicated by events at the end of 2002 and early 2003; and again in mid 2003. From the last months of 2002 through March 2003 cereal distributions to about 3 million core beneficiaries had to be suspended due to the lack of WFP cereals. The Government partly compensated for this shortfall by transferring part of the PDS rations to nurseries and kindergartens, and by increasing the rations for pregnant and lactating women from its own resources. Also cooperative farm families transferred part of their food to these institutions.

The recommended number of food aid beneficiaries is as follows

Table 10.: DPR Korea - Recommended number of food aid beneficiaries for 2004

Orphanages	
- Children	7 587
- Caregivers	1 855
Pregnant/Nursing Women	297 955
Nurseries	
- Children (6 months-4 years)	983 734
- Caregivers	89 431
Kindergartens	
- Children (5-6 years)	505 172
- Caregivers	33 678
Primary Schools	
- Children (7-10 years)	1 142 081
- Teachers	67 180
- Recipients of additional ration through the PDS 830 684*	
Paediatric Hospitals/Wards	
- Children (6 months to 16 yrs 66 911*	
- Accompanying mothers	21 101
- Caregivers	1 328
Elderly Persons	709 553
Low-Income PDS Dependents	366 634
Food-for-Work	
- Participants	725 000
- Dependants	1 450 000
Disaster Contingency	111 111
TOTAL	**6 513 400**

* Recipients of additional rations through the PDS and children in hospitals are not included in the total as the figure is accounted for under the respective groups (nurseries, kindergartens, schools)

The total food aid needs for the above categories and numbers of beneficiaries are estimated at 484 446 tonnes for calendar year 2004, of which 343 113 tonnes are cereals for distribution and another 57 309 tonnes cereals to be processed into more nutritious food.

The recommended programme will continue to aim some 50 percent of all resources to children from 6 months to 10 years old in nurseries, kindergartens and primary schools, or in institutions such as orphanages and hospitals. Another 10 percent is aimed at pregnant and nursing women; and some 15 percent to elderly, mainly those without supplementary assistance from relatives.

The 2002 Mission had recommended that WFP, in consultation with the Government, consider direct market interventions to even out price fluctuations. Alarming price increases are indeed being observed; WFP will continue to monitor this closely and, if necessary, will carefully consider appropriate intervention measures as more accurate data becomes available and operating conditions improve.

Monitoring

With five sub-offices in the country (Sinuiju, Wonsan, Hamhung, Chongjin and Hyesan), supported by the main office in Pyongyang, a total of nearly 45 international staff, and access to 162 of the 206 counties (85 percent of the total population), WFP/DPRK continues to have the broadest coverage of all international organizations working in the DPRK.

Some issues are still a matter of concern:

- WFP has no information about the food situation of people living in the non-accessible counties, thus there is a concern that some very vulnerable people are left without assistance;
- The Government still has not provided a comprehensive list of all institutions that benefit from WFP's assistance, despite repeated requests;

- WFP staff is not allowed to select interviewees at random;
- WFP has no access to consumer markets and state shops, which is indispensable to obtain complete information for its household food economy analyses; and
- The Government still refuses to grant visas for WFP staff to be assigned to DPRK if they are nationals of Japan, the ROK or the USA (1 visa to a U.S. citizen has been granted).

The above restrictions reduce the scope for monitoring and hence affect donors' confidence, with serious risks for future funding of the programme.

However, there are some positive and promising trends:

- The most significant development is the greater accessibility by WFP staff to information required to better assess household food security as a basis for programme improvement. A start was already made in 2002, and in the course of 2003 more Focus Groups Discussions and individual family interviews have provided WFP with better structured and standardized information. This includes information on income from wages, salaries and pensions, the prices households pay for food through various channels, and supplementary sources of food such as kitchen gardens and help from relatives. The analyses carried out so far confirm that WFP's food assistance is targeted at the most vulnerable groups.

- Further, despite the SARS crisis in early 2003, which had a negative impact on the number of staff days available for monitoring, a monthly average of 494 monitoring visits were carried out between January and September, an increase of 11 percent compared with the corresponding period in 2002. A further positive development is that the cancellation rate for previously agreed monitoring visits has been reduced from 5 percent in 2002 to less than 1 percent in 2003.

- Working conditions for international WFP staff have further improved since the 2002 CFSAM. Staff in most sub-offices now have greater freedom of movement. The WFP office in Pyongyang has been connected with the internet, and satellite dishes for TV have been installed in the sub-offices.

These positive trends indicate that cooperation between the Government and WFP continues to improve, as does the general operating environment for WFP. It is hoped that this will serve as basis to further strengthen the collection of quantitative and qualitative information and the integration of this mechanism in WFP's routine monitoring activities. In this way, WFP will be in a position to (i) increase its confidence that its food aid is well targeted, (ii) assess more accurately the needs of the low income PDS-dependant households, and (iii) detect in a more timely manner the emergence of any new groups who are in need of assistance.

To this end, households that currently do not benefit from WFP assistance should also be interviewed during monitoring visits. In addition, WFP's questionnaires should be used to collect the required data in a structured and standardized way, to detect trends and emerging issues as they occur.

There is still a certain hesitation on the part of Government officials at various levels to allow more innovative and structured ways of information gathering. Workshops to explain the purpose of the approach, and of the value and use of each piece of information sought, may help overcome this. This may especially be the case as, over time, it becomes more clear that this is the most appropriate way to improve the targeting of food aid and hence raise donors' confidence in food assistance programmes.

This report is prepared on the responsibility of the FAO and WFP Secretariats with information from official and unofficial sources. Since conditions may change rapidly, please contact the undersigned for further information if required.

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