

SPECIAL REPORT
FAOWFP CROP AND FOOD SUPPLY ASSESSMENT
MISSION TO ZAMBIA

10 June 2003

Mission Highlights

- Cereal production in Zambia in 2003 shows substantial recovery from the drought affected previous year. Production of maize, the country's main staple crop, is estimated at about 1.16 million tonnes, almost double the output of 2002 season (602 000 tonnes) and about 28 percent above the average of the last five years.
- Main factors responsible for maize and other staple crop production recovery are: more favourable rainfall over much of the country, highly effective fertilizer distribution programme by the Government (with 50 percent subsidy) and the combined effort of various national and international NGOs and the Government in providing seeds of various crops.
- Maize production in Southern province has revived from last year's very low level to a more normal level of about 210 000 tonnes achieved in 2001.
- There are, however, localised pockets of poor harvest due to erratic rainfall or flooding. Households in these areas, particularly in eight districts in Southern Province, will require both food and seed assistance. Nutrition-focussed interventions for those living with or affected by HIV/AIDS will also be necessary.

1. OVERVIEW

An FAO/WFP Crop and Food Supply Assessment Mission visited the country from 21 April to 10 May to assess and forecast the 2003 crop harvest and estimate cereal import requirements for the 2003/04 marketing year (May/April), including food aid needs.

The Mission was assisted by the staff of the Ministry of Agriculture and Cooperatives (MACO) at the national, provincial and district levels and in the field in information gathering. The Mission benefited from the active participation of the Southern Africa Development Community (SADC), Zambia's Programme Against Malnutrition (PAM) and consultations with other stakeholders such as the Famine Early Warning System (FEWSNet), USAID, the World Bank, International Monetary Fund, and national and international NGOs such as CARE, CRS, CLUSA, the Food Security Research Project, Zambia National Farmers' Union, National AIDS Council, Omnia Fertilizer Zambia Ltd., Millers' Association and CHC Commodities among others.

Organized into five teams, the Mission visited 46 of the 73 districts in the country and interviewed government officials at various levels, community leaders, farmers, traders and other key informants, and observed standing crops in fields and harvested crops in stores to assess crop yields. The Mission also used high-resolution SPOT-4 satellite images to verify rainfall and vegetation conditions in 2002/03 compared to previous years. Secondary data from various sources were cross-checked with information collected from the field.



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, ROME



WORLD FOOD PROGRAMME, ROME

This year's staple crop production (cereals, cassava and sweet potatoes) of 1.57 million tonnes in cereal equivalent is markedly better than the 1.03 million tonnes during 2001/02, due mainly to a generally favourable rainfall regime and enhanced and timely availability of inputs. The season was also relatively free from crop pests and diseases. The maize harvest is forecast at 28 percent above the average of the last five years. Other crops also benefited from input programmes, notably cassava and sweet potato, for which the Government and a number of NGOs provided planting material.

Although crop production was generally satisfactory in the country as a whole, there are areas where, either because of rainfall anomalies or difficulty of access to inputs, production will be very low. Some farmers suffered partial or complete crop failure resulting from localised dry spells, while others lost crops to flooding following heavy rains towards the end of the season. For instance, last year, Southern Province performed very poorly, mainly because of drought. This year the situation is considerably better, but there are still areas that have performed even worse than last year, with occasional reports of total crop failure.

While the food situation this year is satisfactory, chronic poverty in both rural and urban areas of Zambia makes access to adequate food extremely difficult. The focus of assistance should, therefore, depart from emergency relief to development. WFP's Food-for-Work (FFW) programmes for 2003/04 will include the creation and preservation of assets such as water control and harvesting infrastructure, natural resource conservation, skills upgrading in conservation farming, basic environmental and sanitary works, aquaculture, horticulture and fish farming promotion, and HIV/AIDS and gender awareness. Thus, food aid will be used primarily as an incentive for targeted households to invest time and resources in asset creation and rehabilitation. During the October-March lean season, WFP assistance will contribute to meeting minimum daily energy requirements.

2. SOCIO-ECONOMIC SITUATION¹

2.1 Recent macro-economic developments

The Zambian economy continued its modest recovery in 2002 with an estimated growth rate in real gross domestic product (GDP) of 3 percent after a rate of 4.9 percent in 2001 and 3.6 percent in 2000. Part of the recovery in 2002 is due to copper output increase of 10 percent and international copper price increase of 5 percent. Trade deficit has been estimated to decline from US\$ 339 million in 2001 to US\$ 278 million in 2002. The current exchange rate is about 5 000 kwacha per US dollar and has been relatively stable over several months. The average annual inflation rate has been relatively stable but still in excess of 20 percent over the last three years with an estimated at 22.2 percent in 2002.

The country had a disastrous economic performance during the 1990s with an average annual real GDP growth rate of about 0.4 percent while the sub-Saharan Africa averaged 2.4 percent. Zambia's economy is dependent on copper and cobalt production as 60 to 80 percent of total exports come from these two metals. The average international copper price fell from US\$ 1.19/lb in 1990 to 72 US cents/lb in 2001. During the same period copper production fell from 422 000 tonnes to 299 000 tonnes. Cobalt prices declined from US\$ 24/lb in 1997 to less than half of that in 2001. Hyper inflation in the 1990s, as high as 183 percent in 1993, combined with sharp devaluation of the currency by about 360 percent in 6 years eroded the purchasing power of household incomes, worsening the food security situation and poverty level of the country. Consequently, the country is now among the poorest in the world with a per capita income of US\$ 355 in 2001 and ranks 153rd out of 173 countries on UNDP's Human Development Index, 2002. Over 60 percent of the population lives on the equivalent of US\$ 1 or less per day. General economic decline combined with the ravages of HIV/AIDS have reduced average life expectancy of Zambians to about 37 years down from 54 years during the mid-1980s.

2.2 Agriculture in the economy

The potential for agriculture-led economic growth in Zambia is quite apparent. However, despite its vast land and water resources Zambia has been net food deficit in recent years. Agriculture provides employment to two-thirds of the labour force and provides direct livelihood to more than half of the country's population. Agriculture accounted for about 19.6 percent of GDP in 2001 down from 21.6 percent in 1999. Agricultural production in 2001 was severely reduced primarily by drought. The country's main cash crops are

¹ The content of this section is based on a variety of sources including the Economist Intelligence Unit reports and publications of the World Bank, IMF, FAO, UNDP and Central Statistical Office (CSO).

groundnuts, tobacco, cotton and coffee, with cut flowers having become an important export for a small number of producers in the last ten years.

Agricultural exports estimated at US\$ 66 million in 2002 accounted for 7.2 percent of the total merchandise exports of the country, down from nearly 22 percent in 2000. Both 2001 and 2002 were negatively affected by a substantial drop in food exports to DRC mainly due to lower domestic production. Zambia is a landlocked nation bordering 8 other countries which provides ample opportunity for cross border trade. One study showed that the unrecorded cross border trade in food in 1998 was about US\$ 65 million mostly to DRC. There was a two-way trade flow of agricultural goods with Zimbabwe with net imports into Zambia in 2002/03.

2.3 Current agricultural policy issues

Agricultural development in terms of diversification of production and exports, income generation, creating employment and improving food security has been given the highest priority in the country's poverty reduction strategy paper (PRSP) prepared last year. The World Bank assistance package of US\$ 150 million under the Highly Indebted Poor Countries (HIPC) programme is currently being negotiated. The Government has been trying to pursue a land tenure policy of moving away from the communal land ownership to individual land titles. There has been an increased emphasis on commercialisation of small and medium scale farms.

In many parts of the country the small scale farming sector is regressing on the technological scale from draught animal power to hand hoe cultivation. The "corridor" disease decimated cattle population in the south and west of the country some 6-7 years back, therefore urgent restocking of farms is needed. Currently conservation agriculture (e.g. zero tillage) is being encouraged and is showing positive results in drought prone areas. This helps improve household food security but its potential to increase production substantially and commercially is limited.

During the 2002/03 season, the government aggressively pursued a policy of providing subsidized inputs such as fertilizer and seeds which seems to have paid off in terms of improvement in the current harvest. All indications are that this policy will continue for the next year. In order to avert the usual harvest time producer price collapse the Government has announced that it plans to implement a floor price policy for the whole country. It is expected that the floor price for white maize may be around US\$ 120 to 130 per tonne (equivalent to about 600 ZMK/kg). However, by the time the Mission was in the country (early May) no floor price had been announced.

2.4 HIV/AIDS and agriculture

The HIV/AIDS pandemic continues to adversely affect the economy by reducing the active labour force and increasing the number of orphans. In Zambia HIV/AIDS is however predominantly an urban problem since the infection rate (11 percent) for the rural population is less than half that (23 percent) for the urban population. The Mission was told by the local extension staff that at the district level efforts are being made to identify the affected and provide them with free milled grain as the affected have no strength or resources to take the grain to the mill or mill it themselves by pounding at home. More balanced and energy enhancing food, free seed packs and counselling among other assistance are being organized.

3. CROP PRODUCTION IN 2002/03

3.1 Main factors affecting production in 2003

Rainfall

In most parts of Zambia, rainfall during 2002/03 was markedly better for crop production than it was in the 2001/02 season. Though there were some false starts to the season, extensive re-seeding was usually not required except in the south where farmers reported having to replant as many as three times. Figures 1 – 4² indicate rainfall patterns in Zambia in 2002/03 cropping season from September 2002, dekad 1 (091) to 2003, dekad 3 (043). Figures 1-3 show reasonable conformity to the long-term average in the north, east and west of the country, while Figure 4 shows a rather less favourable, more erratic pattern in the south, where total rainfall is generally lower than elsewhere. Nevertheless, although some areas in the south experienced

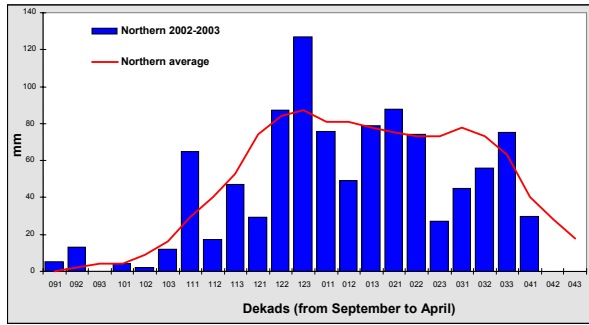
² Figures 1 - 4 are based on rainfall estimates from satellite imagery combined with ground-truthing from terrestrial stations. These estimates are considered to give a more accurate representation of the season's rainfall than the records from individual stations, albeit they may mask locally important variations such as drought periods in certain areas.

drier conditions this year than last, and received less than half of their expected total annual rainfall, others were close to the average and received considerably more rain than during the previous season.

In addition to the mostly short periods of drought following the start of the rains in many areas, parts of the north of the country experienced unusually dry spells of up to three weeks during February and early March.

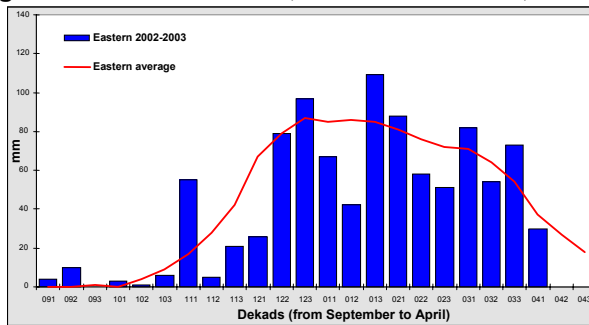
The effects of Cyclone Japhet were felt in Zambia during late February and March. In the north and east of the country, the increased rainfall resulting from the cyclone had a beneficial effect on crop production, terminating, in many instances, a period of relative drought that might otherwise have reduced productivity. In the west and south, however, significant areas of crop were submerged by floods resulting from the increased flow of the Zambezi River. In Copperbelt Province, strong winds and high rainfall associated with the cyclone caused some lodging of maize. In many parts of the north and east of the country, the bean crop suffered from water logging and leaf diseases caused by the excessively wet conditions during March.

Figure 1. Dekadal rainfall, Northern Province, 2002/03



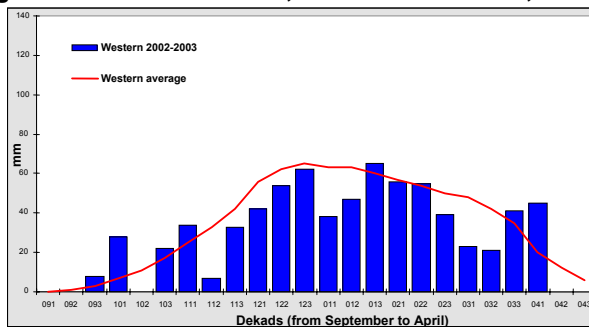
Source: FAO GIEWS

Figure 2. Dekadal rainfall, Eastern Province, 2002/03



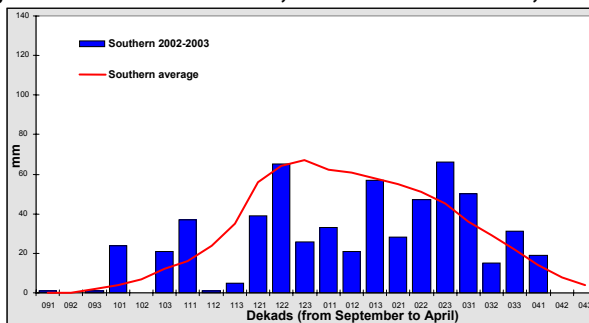
Source: FAO GIEWS

Figure 3. Dekadal rainfall, Western Province, 2002/03



Source: FAO GIEWS

Figure 4. Dekadal rainfall, Southern Province, 2002/03



Source: FAO GIEWS

Agricultural inputs and husbandry practices

In 2002/03, fertilizer use in Zambia was above the average level of recent years as a result of MACO's successful subsidised programme of distribution known as the Fertilizer Support Programme. Commercial companies were contracted, on receipt of half the cost, to sell urea and D-compound to farmer purchasers at half price. Small and medium farmers responded well to the programme, most buying with cash and only relatively few waiting till credit became available through the cooperatives. A national total of about 143 000 t of both fertilizers was used during the season, representing a coverage of about 360 000 hectares of maize, assuming the recommended application rate of 200 kg of urea and 200 kg of D-compound per hectare. This compares with a national total of 110 000 tonnes in the previous year. (In both years, a fairly constant 40 000 tonnes was used by large commercial producers). Delivery was timelier than in recent years.

Maize seed was sold and distributed by a number of agencies including MACO. Unfortunately this was almost exclusively hybrid seed, thus obliging farmers to acquire new seed for planting next season rather than allowing them to collect home-produced seed as would be possible from open-pollinated varieties. Sorghum seed was distributed in several of the drier parts of the country in an attempt to convince farmers of its suitability as a drought-tolerant crop.

MACO and others, especially in the wetter northern part of the country where roots and tubers are most important, distributed cassava cuttings and sweet potato vines to growers. One of the objectives of the distribution of cassava cuttings was to introduce disease-free and disease- and pest-tolerant material into the existing crop.

The reduction in cattle numbers in recent years as a result of corridor disease and CBPP has led to a significant decline in the use of oxen for land preparation. More often than not, smallholder crops are poorly weeded, which can lead to yield reduction through competition for available soil moisture and light and through the harbouring of pests and diseases.

Pests and diseases

The year 2002/03 was comparatively free of crop pests and diseases. Nonetheless, some areas reported stalk borers and grey leaf spot in maize; corn earworm was not uncommon but its level of incidence was low, while in areas where the end of the season was unusually wet, corn cob rot was sometimes reported. Rodents were occasionally a problem but not abnormally so, as were birds, which represent one of the main disincentives to growing sorghum.

Beans were not infrequently attacked by bean stem maggot, and groundnut yields were reduced by anthracnose and rosette virus. Despite the fact that disease-free cuttings have been introduced into the cassava crop, there is still a lot of cassava mosaic, especially in Luapula Province where cassava is the staple for much of the population.

The incidence of larger grain borer in stored grain is reported to be on the increase, especially in Eastern Province.

3.2 Maize production forecast for 2003

At 1.16 million tonnes, the amount of maize expected to be produced by Zambia in 2003 will be slightly above the long-term average (1.07 million tonnes), as is shown in Figure 5. This is the highest level since 1996, and higher than the most recent near-average year of 2000. However, it is far below the very high levels recorded in 1988, 1989 and 1993. Table 1 gives the estimated production figures by province for this year, and includes those for 2001 and 2002 for comparison. According to the Zambia National Farmers Union, about 450 000 tonnes of this will have been produced on large commercial farms; this figure includes 55 000 tonnes produced with supplementary irrigation and harvested prior to the main rainfed crop. Commercial maize yields range from 5 tonnes per hectare rainfed to between 8 and 10 tonnes per hectare with supplementary irrigation. The share of commercial production may rise in future with big farmers turning away from soybeans towards increased maize acreage following the entry of cheap soya products for poultry feed from Zimbabwe onto the Zambian market.

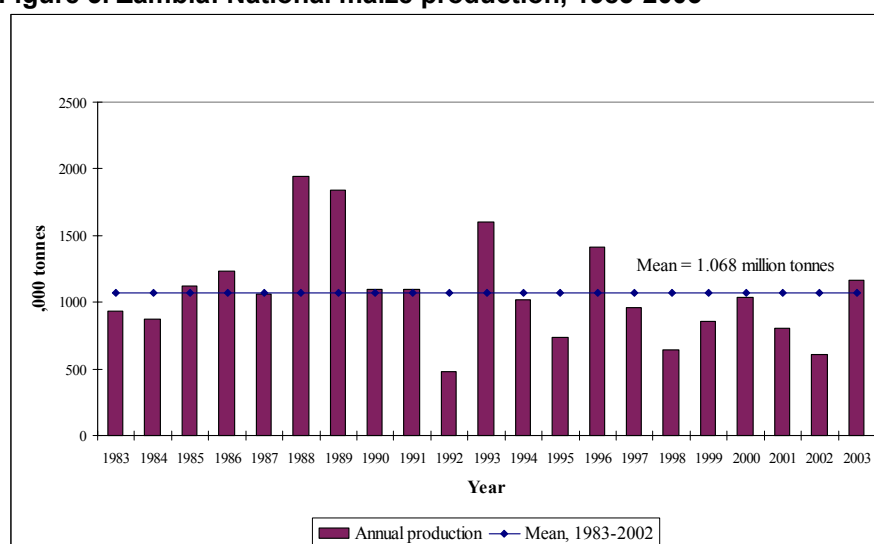
Table 1. Zambia: Area, yield and production of maize, 2001-03^{1/}

Province	2003			2002 ^{2/}			2001 ^{2/}			Percent change in production	
	Area '000 ha	Yield t/ha	Prod. '000 t	Area '000 ha	Yield t/ha	Prod. '000 t	Area '000 ha	Yield t/ha	Prod. '000 t	03 vs 02	03 vs 01
Central	90	2.50	225	83	1.57	131	89	1.80	162	72	39
Copperbelt	37	2.68	98	36	1.77	64	33	2.07	68	52	44
Eastern	225	1.74	392	170	1.19	202	177	1.08	196	93	99
Luapula	13	2.00	26	10	1.56	16	13	1.17	15	65	73
Lusaka	35	1.85	65	26	1.89	48	28	2.07	58	34	11
Northern	45	1.60	72	31	1.21	38	42	1.08	43	89	66
Northwestern	20	1.60	32	18	1.08	20	18	1.08	19	64	67
Southern	168	1.25	210	149	0.42	63	132	1.62	211	232	-1
Western	55	0.76	42	52	0.38	20	49	0.54	28	114	49
ZAMBIA	687	1.69	1 161	576	1.05	602	582	1.35	802	93	45

^{1/} Figures may not add up exactly due to rounding.

^{2/} Source: CSO, Government of Zambia.

Figure 5. Zambia: National maize production, 1983-2003



Source for 1983-2002 figures: FAOSTAT and CSO

3.3 Production forecast for other food crops

Cereals other than maize have generally performed satisfactorily this year as a result of the better rainfall regime. However, the area planted to these cereals was often reduced in response to the enhanced availability of fertilizer and maize seed and in consideration of the potentially high yields and high commercial value of maize.

The area planted to finger millet, which is mostly found in Northern and parts of Central Province has, in some places, given way to increased maize production, but those farmers who did plant it this year generally got good results. Much of the finger millet crop is still produced using the *chitemene* system. Pearl millet, which is mostly found in Western Province, has likewise seen a slight reduction in production this year. National production of both millets, from an area of about 60 000 ha, is estimated to be about 35 000 tonnes for 2003, which is slightly lower than last year's figure.

The area planted to sorghum has been diminishing in recent years, although various agencies advocate its use either in preference or in addition to maize in order to ensure food security in areas of unreliable rainfall such as Southern Province. Copperbelt and Northwestern Provinces are the main producers, accounting for almost half the country's total production between them. Some provinces reported a reduction in sorghum area this year, with farmers increasing their maize area in response to the Fertilizer Support Programme. However, yields are generally better this year, and national production is expected to show an increase of almost 10 percent, from 16 800 to 19 400 tonnes, from a total area of about 28 000 ha.

Rice, although a minor crop in Zambia (about 13 000 hectares this year), is important in parts of Northern Province where this year's better yields of almost 1.5 tonnes per hectare have contributed to almost a doubling of last year's production. In Western Province, rice production will be down on last year as a result of excessive flooding in some areas.

Winter wheat production is virtually confined to large commercial farms in Central, Copperbelt, Lusaka and Southern Provinces. The total national production this year is forecasted to be about 100 000 tonnes, much better than before due to the anticipated increase in irrigation facilities.

Table 2. Zambia: Production of cereals other than maize and wheat, 2002 and 2003 ('000 t)

Province	Millet		Sorghum		Rice (Paddy)	
	2003	2002	2003	2002	2003	2002
Central	5.0	4.1	2.0	1.8	0.1	0.1
Copperbelt	0.2	0.2	5.0	4.3		
Eastern	1.0	1.2	0.7	0.9	3.0	2.8
Lusaka	3.6	3.6	1.5	0.4		
Luapula	0.1	0.04	0.1	0.03	0.7	0.6
Northern	21.0	23.6	2.1	2.5	8.0	4.7
Northwestern	0.6	0.5	4.0	3.4	0.03	0.03
Southern	0.7	0.4	1.1	0.7		
Western	3.0	3.9	3.0	2.8	2.5	3.3
ZAMBIA	35.1	37.6	19.4	16.8	14.3	11.6

Estimation of the production of cassava in smallholder mixed farming systems is notoriously difficult for several reasons. Cultivars of different maturation periods ranging from less than one year to more than two years may be grown; planting may be done at different times of the year; cassava may be intercropped with a number of other crops, making its area of cover difficult to estimate; harvest may be delayed and mature roots left in the ground for several months depending on household food requirements; in years when other crops are in good supply, cassava plants may be abandoned completely and never harvested. These difficulties are acknowledged by the CSO which has nevertheless proposed a national production figure of 850 000 tonnes fresh weight for 2001/02 assuming a yield of 7 tonnes per hectare (which may be too high, considering the extent of intercropping). Northern, Luapula and Western Provinces are the largest producers, accounting for almost 90 percent of the country's total production. Based on the same assumptions, the increased area and better rainfall this year would suggest a figure of about one million tonnes fresh weight in 2003. However, reducing the yield to 4 tonnes per hectare would give a national production of about 600 000 tonnes, which may be more realistic.

The area under sweet potato has, like that of cassava, expanded in 2002/03 as a result of various programmes for the distribution of planting material. Unlike the yield estimates for cassava, the CSO's yield estimates for sweet potato, at around 2 tonnes per hectare, may be on the low side. The assumption of a national crop area of 54 000 hectares (midway between CSO's estimates for 2000/01 and 2001/02) and a yield of 3.5 tonnes per hectare leads to a national production figure of 189 000 tonnes fresh weight.

Table 3. Zambia: Area, yield and production (in fresh weight) of cassava and sweet potatoes, 2001-2003

	2003			2002 ^{1/}			2001 ^{1/}		
	Area '000 ha	Yield t/ha	Prod. '000 t	Area '000 ha	Yield t/ha	Prod. '000 t	Area '000 ha	Yield t/ha	Prod. '000 t
Cassava ^{2/}	150	4	600	122	7	854	116	7	812
Sweet potatoes	54	3.5	189	34	1.8	61	74	2.3	170

^{1/} Source for 2001 and 2002 is CSO.

^{2/} Cassava area refers to the area under mature cassava that can be harvested during the particular year.

Eastern and Northern are the main groundnut-producing provinces. Eastern reported an expansion of area while Northern reported a reduction. Much of the main growing area was affected by a dry spell in February and early March, which, since the crop is normally planted at the beginning of the calendar year, is a critical period for seed formation. Consequently, up to 40 percent of some crops produced 'pops', or empty shells. Anthracnose and rosette virus were also reported.

3.4 Livestock and pasture

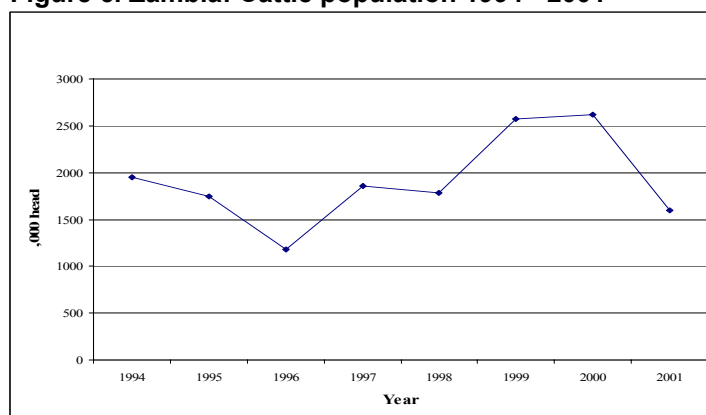
Zambia's cattle numbers show considerable annual fluctuations, but they are said to have been falling steadily over the last three years, continuing the downward trend shown between 2000 and 2001 in Figure 6. This is mainly the result of disease, but drought has also played a part. Mortality from corridor disease (East Coast Fever) has been high in the east and centre of the country, to the extent that some authorities believe that the only surviving herds in their districts are those that are regularly dipped or sprayed by their owners. The difficulty of controlling Corridor Disease has, in recent years, been exacerbated by drought since water is needed for dipping or spraying the cattle.

Contagious bovine pleuro-pneumonia (CBPP) is thought to have entered Western Province from Angola around 1997; it is also present in Northern Province where it may have been introduced as a result of the movement of cattle across the border with Tanzania. A ban on the movement of live animals along the main road from Western Province has so far prevented the disease from reaching Central and Copperbelt Provinces, but it has entered Northwestern which is used by owners as an alternative un-patrolled route to move their stock.

Anthrax is also prevalent in Western Province, where a number of cattle deaths (and some human fatalities from eating infected meat) are reported each year. Foot-and-mouth disease is prevalent in Northern and Eastern Provinces, and cases of African swine fever have been reported in Eastern Province.

During the recent dry years there has been a significant movement of cattle out of Southern Province into areas with higher rainfall and better pasture. The slightly better rains this year may slow this trend, even if only temporarily.

Figure 6. Zambia: Cattle population 1994 - 2001



Source: MACO Veterinary Service

Newcastle Disease has caused high mortality in poultry, with some districts, such as Serenje, reporting up to 75 percent flock loss.

4. AGRICULTURAL SITUATION BY PROVINCE

Central Province

The rains started around mid- to late November. Many parts of the province experienced a dry spell of up to two weeks in December. This short period of drought was then followed in most places by good, well-distributed rainfall up to mid-April. Some areas however received excessive rainfall at the end of January and the beginning of February.

Small farmers were relatively unaffected by the two-week drought period at the beginning of the season as they had not sown their maize by then. Some large commercial farmers, however, who had dry-planted before the initial onset of the rains, resorted to irrigation to tide them over the dry spell, and there were some reports of fields having to be reseeded. The area under maize showed an increase on last year. This, combined with substantial yield increases resulting from overall better rains and greater fertilizer use, has led to expectations of a doubling of production in Serenje District compared with last year.

Sorghum and millet were planted later than usual this year as a result of the early dry spell, but both crops are expected to produce better than last year. The area under these crops is similar to that of the previous year, and there have been no reports of significant pest or disease problems.

The area under cassava has grown since last year as a result of the PAM cutting-distribution programme and encouragement to farmers to grow more food security crops. Yields are expected to be normal this year, despite some reports of mealy-bug infestation. The area under sweet potato continues to expand in response to the market potential locally, as well as in Copperbelt Province and Lusaka. Potatoes are planted to a limited extent around dambos; their low yields, at about 3 tonnes per hectare, are mostly attributable to poor crop rotation.

Beans have suffered this year from a surplus of rain. In spite of advice from the extension service to sow on ridges, most farmers continue to sow on the flat areas where the plants are susceptible to flooding and water-logging.

There has been considerable mortality amongst cattle in both districts in recent years as a result of Corridor Disease. It is felt that this downward trend may now have reached its lowest point, with all surviving cattle being treated by dipping or spraying. Pigs suffer from mange and malnutrition. Newcastle Disease has been extremely serious in certain parts of the province.

Maize prices in Serenje District dropped sharply from 5 000/6 000 kwacha per meda (5 litre container) in January to 1 500 kwacha in February. This may have been in response to good harvest expectations for both maize and sweet potato, but it also coincided with a significant influx of relief food into the district.

Copperbelt Province

Rainfall in Copperbelt Province was above normal in 2002/03. The season started in late October and, apart from a relatively dry spell of two to three weeks in November, continued until the beginning of April. The end of the season brought some unusually heavy rains which were occasionally damaging to crops, but otherwise the rainfall distribution was satisfactory.

The area under maize in Copperbelt is relatively small, but average yields are consistently high. This year, input availability was generally better than in previous years although there were still some shortcomings and many farmers were obliged to buy local maize seed or to use their own seed from the previous year's harvest. The dry spell during November necessitated some replanting of maize but most of the crop survived without this requirement. In March and April, the heavy rains and high humidity caused some lodging and cob rot. Nevertheless, the average provincial maize yield was the highest in the country at 2.7 tonnes per hectare, which was significantly higher than either of the previous two years. Combined with a slight expansion in area, this brought about an increase in production of approximately 50 percent.

Groundnut has performed well this year, though the heavy late rains have led to some germination in the field. Cassava and sweet potato have done well, with an expansion in the area under cassava prompted by the recent dry seasons.

Corridor disease is present in the province's cattle population, but mortality is thought to be below 10 percent. Mortality of poultry due to Newcastle disease is also low.

Eastern Province

Rainfall in Eastern Province was generally very favourable this year. The rains started intermittently in November and then continued well from December till the end of March.

The intermittent nature of the rains in November meant that a lot of farmers had to replant their maize. Nevertheless, there was a substantial increase in the area planted to maize, mainly in response to the Fertilizer Support Programme but also as a result of assistance with inputs from various NGOs. Compared with 2000/01 and 2001/02, the area this year showed an increase of more than 30 percent; this has a significant impact on national production since Eastern Province is the country's principal maize producer. Enhanced use of inputs, low incidence of pests and diseases, and the generally favourable rainfall regime brought about a significant increase in average yield compared with last year. The total provincial production exceeds 390 000 tonnes representing about one-third of the national maize harvest. So good was the harvest in certain areas such as Lundazi District, that shortly after the beginning of the harvest, farmers were

reported to be selling substantial amounts across the border in Malawi. This was reflected in market prices which fell from about 1 400 kwacha per kilogramme in January to 500 by the end of April.

The incidence of larger grain borer in stored grain is reported to have increased, especially in Lundazi and Chama Districts. This may have an impact on this year's good harvest if above-average volumes of grain are stored domestically.

Eastern Province is also the country's most important producer of groundnuts. Area and yield have both increased this year and overall production is expected to be above average, and considerably better than that of last year. The area under beans also expanded this year but yields were similar to last year's, limited partly by attacks of bean stem maggot.

The incidence of Corridor disease in the cattle population is high at 16 percent, but CBPP is not present in the province. African swine fever, Newcastle disease and fowl pox have a significant impact on the pig and poultry populations respectively. There are concerns that there may be a shortage of water for livestock in the south of the province.

Luapula Province

The rains started early in November and continued satisfactorily into January. Much of the province then experienced a dry spell from late January till around mid-February, this period of drought being more severe in the north than in the south of the Province. The rains resumed during the second half of February and continued well into March, with some scattered showers in early April.

The province's main staple is cassava, which covers more than 100 000 ha. The area under cassava has been increasing in recent years, encouraged by PAM's distribution programme of disease-free cuttings of varieties that are tolerant of cassava mosaic and mealy bugs. However, since the sink of disease is so extensive in the existing crop, cassava mosaic is still very prevalent. Yields this year are expected to be similar to those of last year. Sweet potato production has also been supported by a vine-distribution programme, and yields are expected to be good.

Despite the fact that the area under maize has increased this year, largely as a result of the Fertilizer Support Programme and PAM's Food Security Package, maize still covers less than one-tenth of the area covered by cassava and is grown as a significant component of their cropping pattern by only a quarter of all farmers. The principal maize-growing districts are in the centre of the province. Early-planted maize has done well this year, with yield expectation in excess of 2 tonnes per hectare. However, about 25 per cent of growers were unable to raise the cash to buy seed and fertilizer in November, even at the subsidised cost, and waited till December when credit became available through the agricultural cooperatives. Those maize crops planted after mid-December were adversely affected by the drought in late January and early February, and were also damaged by maize streak and grey leaf spot. Where these crops survived, they were frequently eaten green. A PANA variety distributed by PAM was said by most farmers who used it to be more susceptible to maize streak than other varieties, irrespective of the time of planting.

Groundnuts were badly affected by the January-February drought which arrived at the time of pegging and caused extensive popping. The widely-grown slow-maturing variety 'Chalimbana' suffered more than faster-maturing varieties. Beans, which are normally planted in January, were severely affected by the drought, with significant numbers of farmers experiencing total loss; provincially, production is expected to be very low.

There have been no major problems this year with regard to livestock in Luapula, and Corridor Disease and CBPP have not yet been reported in the province. Perennial problems include other tick-borne diseases and *Streptothricosis* skin disease of cattle, and worms and other parasites in pigs, which are predominantly free-range. Newcastle Disease is locally serious in poultry as there is no inoculation programme.

Maize prices were high in December, ranging between 5 000 and 6 000 kwacha per meda (5-litre container). The price started falling in March and had reached 1 500 kwacha by early May. The fall was attributed in part to expectations of a good maize harvest nationally and provincially (though the latter represents a comparatively small tonnage), and in part to increasing amounts of sweet potato reaching the market.

Lusaka Province

The rains started in late October in most of Lusaka Province, fell intermittently through November, improved at the beginning of December, and then continued satisfactorily till the end of March. The exception to this

pattern was Luangwa District which experienced a very much drier season, especially in January when 24 dry days were recorded; there was consequently a significant amount of partial or total crop failure in this district.

The intermittent rainfall distribution in November frequently called for the replanting of early-sown maize. Nevertheless, the province showed an increased maize area compared with last year as a result of the Fertilizer Support Programme and input assistance from a number of NGOs. Average maize yields were similar to those of the previous two years, partly as a result of being reduced by the partial and total failure of crops in Luangwa District; in other districts, yields were generally good.

Bean crops were not infrequently attacked by bean stem maggot. In Luangwa District groundnuts were also affected by the unusually dry conditions, with levels of 'popping' reported at about 50 percent.

Corridor disease is present to a limited extent in Lusaka Province's cattle population, but CBPP is not. The incidence of foot-and-mouth disease is said to be increasing. There was an outbreak of swine fever in September 2002, which had an impact on the province's pig industry.

Northern Province

Northern parts of Northern Province receive some of the highest rainfall in Zambia, with more than 2 000 mm per annum falling in some areas, while in the south of the province long-term mean annual rainfall is in the range of 1 000 mm. In the 2002/03 season, the rains started on time, between late October and early November. There was then a brief dry spell over most of the province from the end of November to early December. In the north, this was followed by good rains from mid-December until the end of January, but February brought a prolonged dry spell which continued, in some places, into March. The rains then resumed, and continued satisfactorily into April. In the southern portion of the province, a shorter dry spell was experienced from mid- to late March, after which the rains resumed until mid-April.

The province's area under maize has increased this year, mainly as a result of a very extensive uptake of fertilizer under the Government's Fertilizer Support Programme. The promising start to the rainy season also encouraged farmers to expand their area under maize. The dry spell at the beginning of the season was generally not serious enough to require replanting, but it did necessitate a certain amount of gap-filling. The later dry spells - during February in the north and March in the south - came at a time when early-planted maize was sufficiently well established to withstand them and when the soils had already accumulated a good store of residual moisture. Late-planted maize, however, suffered a significant setback in the north. There were reports of stalk borer damage in the drier parts of the province. Overall, yields are expected to be good, and production to be substantially better than last year.

Millet is grown extensively in the province using the chitemene system. Rainfall this year has been very favourable for the crop and, despite the fact that the area is slightly reduced as a result of an expansion of the area under maize, production is expected to be above average. The area under sorghum has also declined slightly, giving way to maize.

The area under cassava increased this year, partly as a result of PAM's, MACO's and SIDA's programmes for the distribution of disease-free cuttings of varieties that are tolerant of cassava mosaic and mealy bugs. The crop in most areas looks very healthy, and production is expected to be high. Sweet potato yields are expected to be very good this year; the area under sweet potato has also increased in response to market opportunities, in some cases as far afield as Botswana.

Significant areas of beans and groundnuts, which are planted at the beginning of the calendar year, were adversely affected by the dry spell in the north of the province, with groundnut showing a high proportion of pops. Beans throughout the province were also attacked by anthracnose, various leaf spot diseases and bean stem maggot.

Northern Province is Zambia's main coffee-producing area, with 500 hectares of estate production and a large number of smallholder out growers. Yields are not high in Northern Province, but production this year is expected to be satisfactory, despite the fact that the incidence of coffee berry disease is on the increase.

Corridor Disease affects cattle in the province, and CBPP is thought to be more prevalent now than in recent years as a result of the movement of cattle between Tanzania and Zambia. Liver fluke and worms are perennial problems affecting small ruminants grazing near dambos.

Parts of the province reported a sharp decline in the price of maize coinciding with the distribution of relief food during January and February, but by the end of April prices had stabilised at a level normal for the time of year.

Any food-supply problems that exist in the province are attributable to restricted access and distribution rather than to a deficit in overall production. The Food Reserve Agency still holds stocks in several districts. Some areas such as Kaputa and the Chambeshi Plains produce relatively small amounts of food crops, but this is partly compensated for by their fish catch. Fish are an important part of the community's diet as well as being an important item of trade to urban centres in Zambia and DR Congo.

Northwestern Province

Although some areas received light showers in September, substantial rains started in October. There was a relatively dry spell of two weeks in November and another one in late December and early January. The rains then continued into April, but distribution towards the end of the season was often intermittent. Total rainfall for the season was slightly above average.

With an area of about 20 000 hectares under maize, Northwestern is one of the smaller contributors to national production. Most of the crop is confined to the heavier soils of the east of the province. This year the area expanded slightly from last year's 18 000 hectares in response to the Fertilizer Support Programme, though there were still a number of farmers who were either unable to obtain or unable to afford the recommended inputs. The early dry spell necessitated some replanting of early-planted maize, and the later dry spell at the beginning of January had a slight negative impact on the development of late-planted maize. Grey leaf spot was reported on some of the crop. Nevertheless, yields showed a significant increase on the previous two years.

Cassava is an important crop in Northwest where it is the staple food for populations living on the sandy terrain to the west of the province. The area of cultivation has expanded in recent years, and, despite some varieties harbouring cassava mosaic, production this year is expected to be good. Sweet potato likewise has performed well. Rosette disease was reported on groundnut, and some late-planted beans were attacked by bean stem maggot.

CBBP is present in Northwestern's cattle population, but levels are thought to be still relatively low. The continuing movement of cattle from Western Province and communal grazing are likely to exacerbate the problem in the future. Corridor disease has not been reported in the province. Newcastle disease, however, is locally serious, with some districts reporting up to 50 percent losses of poultry.

Southern Province

There was a timely start to the rains in late October and early November, but this was followed by a dry spell from mid-November to mid-December which necessitated extensive replanting. When the rains did resume in mid-December they were weak, and many farmers were again obliged to replant in January. Some farmers reported an eventual total of as many as four replantings; fortunately several NGOs are present in Southern Province and seed was less difficult to obtain than it might have been elsewhere. In contrast to the beginning of the season, February and March brought unusually heavy rains which caused flooding in low-lying areas.

2002/03 saw an expansion, by about 13 percent, of the area under maize. This was brought about, in part, by farmers' response to the Fertilizer Support Programme, though there are substantial areas in the province where farmers do not use fertilizer. Despite the frequent false starts to the season, the localised flooding in March, and the fact that some areas did not recover from the early drought (e.g. in Livingstone and Sinazongwe Districts), the province's overall maize production is expected to be considerably better this year than last. Last year's average provincial yield was reported as just over 400 kilogrammes per hectare. This year it should be about three times that much, thanks mostly to much improved production in the uplands, giving a total, very similar to that achieved in 2001, of 210 000 tonnes.

Although millet and sorghum weathered the dry spells at the beginning of the season better than maize, they produced very patchy crops. Average yields were very low, despite the fact that there were a few good stands of sorghum. Both crops occupied a larger area than they did in the previous year, but between them they still only covered about 5 percent of the area of maize

Sweet potato production was much better than last year. This increase was attributable partly to an expansion of area, but much more to the fact that last year's yields were extremely low because of drought. The area under cassava, although still very small, has also increased, in response to encouragement by MACO and various NGOs and to the distribution of cuttings by CARE.

Land preparation has been adversely affected in recent years by losses of cattle to corridor disease and to the movement of cattle out of the province to better-watered areas.

Western Province

The start of the rains in late October and early November was followed by a relatively dry spell which continued till December in some areas and till January in others such as Kalabo and Senanga Districts. Most farmers had planted at the beginning of the rains and many were obliged to replant. Rainfall in February and March compensated for the earlier shortfall and was above average in many areas. By the end of March some places in the extreme west were experiencing heavy flooding, with parts of Kalabo reporting the worst floods for twenty years.

Despite the unfavourable start to the season and the later localised flooding, crop production in general is much better this year than it was in 2001/02. This was in part attributable to the increased rainfall, albeit it was poorly distributed, and in part to good availability of inputs which prompted a considerable expansion in cropped area. Districts registering a reduction in maize yield compared with the previous year include Kalabo and Lukulu. On the other hand, the principal maize-producing district of Kaoma, which was unaffected by flooding, has yielded well.

Western is one of the two most important livestock provinces in Zambia. This year, cattle, which would usually be grazing the floodplains after the rainy season, have been forced by the floods onto higher ground where grazing is sometimes limited. This, situation, however, should remedy itself as the floodwaters recede. More serious is the level of disease in the province, with CBPP said to have halved the cattle population in four districts. Anthrax is prevalent and has caused human as well as animal fatalities. Blackleg, haemorrhagic septicaemia and babesiosis have also been reported.

5. FOOD SUPPLY SITUATION

5.1 Grain market prices

Normally, maize prices are lowest in June-July following the harvest period. They start rising gradually and typically peak in February-March. Prices begin to fall from April two to three weeks before the harvest. A similar seasonal pattern was observed this cropping season. However, following a drought affected 2002 harvest, maize prices throughout the country remained higher than normal until February this year. Retail maize prices for two selected markets, one from relatively high maize production area (Kalomo, Southern Province) and another from relatively low production area (Kasempa, North Western province) for 2002-03 in comparison with the previous two years, are shown in Figures 7 and 8. Monthly retail prices during 2000-01 remained relatively low following the excellent maize harvest in 2000. However, a forecast of poor harvest as a result of the severe drought in 2002 sent the lean period (January-March) prices sky rocketing especially in the low production area markets such as Kasempa.

Figure 7: Retail maize prices, Kalomo, Southern Province (ZMK/15 kg)

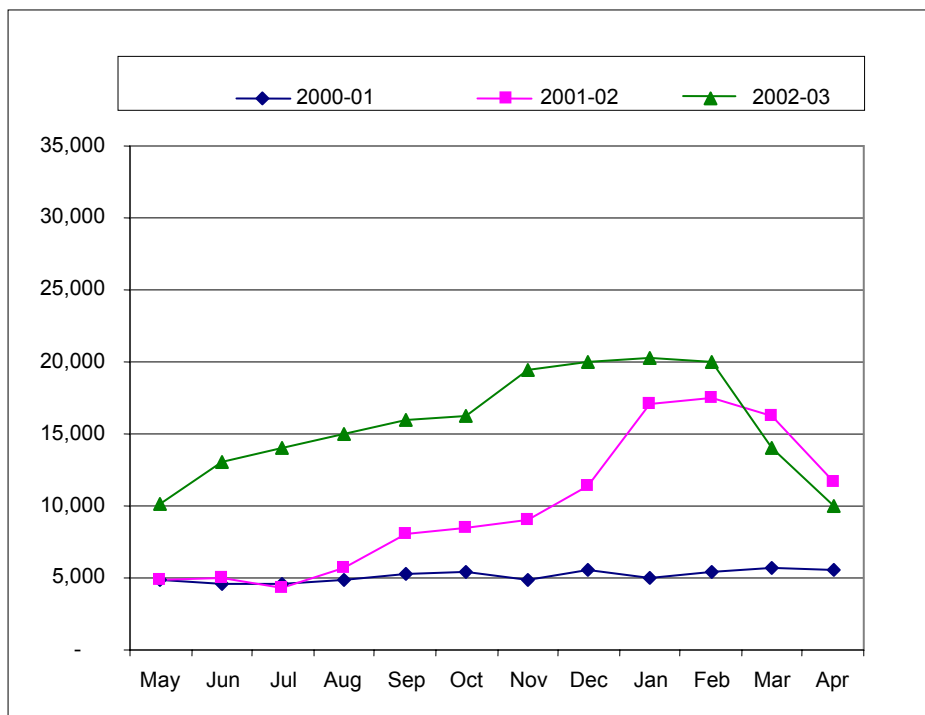
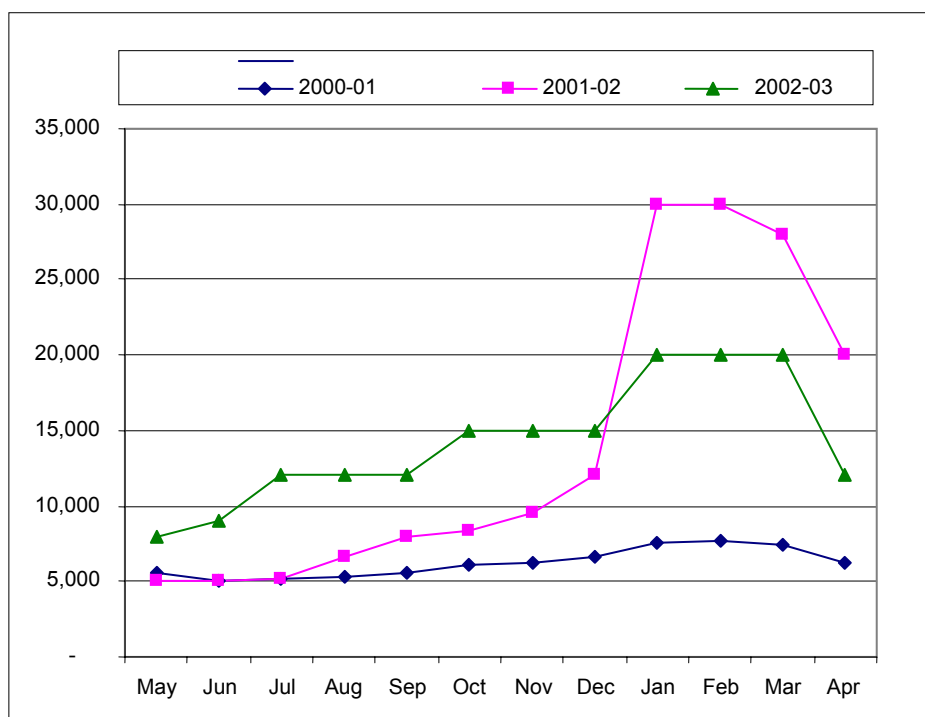


Figure 8: Retail maize prices, Kasempa, North Western Province (ZMK/15 kg)



Source: Agricultural Market Information Centre, Ministry of Agriculture and Cooperatives
April prices collected by the Mission.

During the current season maize prices are declining since February-March, in spite of the fact that the average annual inflation rate has been over 20 percent in the country, and are generally below the corresponding monthly prices a year before. April prices were observed as low as 500 kwacha/kg (which translates roughly into US\$ 100/tonne) in some of the visited markets. The import parity price is about US\$ 175/tonne. Thus in real terms these price drops are even more drastic. There are several reasons for this decline:

- expectation of a relatively good harvest in most parts of the country, with exceptions of localized pockets of poor or no harvest;
- food imports by the government in the order of 40 000 tonnes from December 2002 to April 2003. There is still a balance of about 30 000 tonnes of maize already paid for and still being delivered by the import contractors;
- Relief food distribution by WFP, Government and NGOs to the tune of 85 000 tonnes from January to April 2003. Further relief food distribution of about 8 000 tonnes per month is planned for May and June, and
- owing to the free food distribution the sales of milled maize were lower in March-April, consequently millers are carrying higher than usual stocks and are not buying maize in the local markets.

A combination of all these factors is expected to push the post harvest prices in coming months even further down affecting farmers' incomes negatively.

Finally, it should be noted that there is a great variation of prices between locations reflecting long distances between markets, coupled with poor state of roads in many areas and high fuel costs. This makes it unprofitable for traders to move grain beyond certain distances.

5.2 Cereal supply/demand balance for 2003/2004 (May-April)

The 2003/04 projected cereal supply/demand balance is summarized in Table 4 based on the following parameters and assumptions:

- A mid-marketing year (May 2003 – April 2004), population of 10.66 million, based on the Central Statistics Office (CSO) 2000 census figure of 9.89 million, projected to increase at an average annual growth rate of 2.3 percent.
- The 2003 total cereal production (in cereal equivalent, with rice on milled basis) is estimated at 1.57 million tonnes.
- Opening stocks held by the Government are estimated at about 60 000 tonnes of maize primarily built-up out of recent deliveries on Government contracts. In addition stocks held by millers and traders of about 40 000 tonnes of maize, 1 000 tonnes of rice and 2 000 tonnes of wheat are anticipated as in the past years. Also, the 16 000 tonnes of carry over stocks of maize of WFP from the previous marketing year that are earmarked for distribution in May and June 2003, are included in the overall opening stocks. It is also assumed that farmers and small-scale traders have negligible cereal stocks following the shortage of maize during the past months.
- The annual per caput consumption rates used are: 90 kg of maize, 13 kg of wheat, 6 kg of sorghum and millets and 3 kg of rice. In addition 18 kg of cassava and 5 kg of sweet potatoes, both in cereal equivalent, are included. These main cereals, roots and tubers are estimated to provide about 62 percent of the daily calorie requirement (52 percent from cereals and 10 percent from cassava and sweet potatoes). The remainder of the calories are expected to be derived from fish, livestock products (especially chicken), pulses, oil seeds, pumpkins and fruits and vegetables.
- Seed use for each crop is calculated by using the recommended seeding rates and the estimated planted areas. The seed rates kg/ha used are: 15 for maize (excluding commercially produced hybrid seed), 40 for rice, 10 for sorghum and millets and 100 for wheat. The corresponding areas for planting in '000 hectares for these four crops, respectively, are: 687, 13, 88 and 12. Thus, the total seed use is estimated at 13 000 tonnes.

- Other uses include post harvest losses (10 percent for maize, 3 percent for wheat and 5 percent for other crops); animal feed (very limited on small farms); with a provision of 35 000 tonnes of maize to meet the needs of the animal feed industry; and 65 000 tonnes of maize used by the breweries.
- Exports of maize through unrecorded cross-border trade with the Democratic Republic of Congo. However, given the Government ban on maize exports, volumes are assumed to be low at 10 000 tonnes.
- For the current marketing year closing stocks are estimated at 68 000 tonnes of maize which include about 48 000 tonnes for strategic grain reserve anticipated/planned by the Government and the balance required by milling companies to operate.

Table 4. Zambia: Food balance sheet in cereal equivalent, 2003-2004 (May/April) in '000 tonnes

	Maize	Rice (milled) 1/	Sorghum/ Millet	Wheat	Cassava (Cereal Equivalent) 2/	Sweet potatoes (Cereal equivalent) 3/	Total (Cereal equivalent)
Domestic availability	1 277	10.5	55	102	192	53	1 689
Opening stocks ^{4/}	116	1	0	2			119
Production	1 161	9.5	55	100	192	53	1 570
Total utilization	1 277	34	55	145	192	53	1 755
Food use	960	32	64	139	192	53	1 439
Seed use	10	0.5	0.9	1.2			13
Losses, feed and other uses	216	0.5	2.7	3.0			222
Exports	10						10
Closing stocks	68	1	0	2			71
Cross commodity substitution	13		-13				0
Import requirements	0	23	0	43	0	0	66
Estimated commercial imports	0	23	0	43	0	0	66

1/ Paddy to rice milling rate of 66.67 percent.

2/ Cassava cereal equivalent conversion factor of 32 percent.

3/ Sweet potatoes equivalent conversion factor of 28 percent.

4/ Planned relief food distribution by WFP for May and June 2003.

Note: Numbers may not add up exactly due to rounding.

The total cereal equivalent domestic availability for 2003/04 is estimated at 1.689 million tonnes. With the estimated total utilization of 1.755 million tonnes, the import requirements of 66 000 tonnes of wheat and rice, are projected. This food gap is anticipated to be covered on commercial basis by traders and millers as and when the local market conditions dictate.

6. EMERGENCY FOOD AID REQUIREMENT

6.1 General

Government actions since the 2001-02 growing season included: (a) declaring an emergency and requesting WFP assistance, (b) facilitating the importation of 46 854 tonnes of maize (of which 19 288 tonnes was brought in through the Food Reserve Agency and 27 666 tonnes through private firms), distributing through WFP channels 31 400 tonnes of cereals through April 2003, and (c) assigning civil servants from various agencies to the National Vulnerability Assessment Committee, chaired by the Disaster Management and Mitigation Unit (DMMU) under the Office of the Vice President. However, Government's decision in August 2002 to prohibit the distribution of genetically modified maize as relief food, even if milled, resulted in 18 000 tonnes of WFP food stocks having to be removed from the country, and the diversion of 33 000 tonnes that were in the pipeline bound for Zambia. This partially contributed to the eventual reduction by 21 percent in WFP's resourced versus planned tonnages (94 750 tonnes vs. 120 000 tonnes); however, with the Government's stock included, WFP distributed 126 150 tonnes, thereby slightly exceeding the plan.

In agricultural policy, the Government focused on ensuring timely delivery and distribution of agricultural inputs and the rehabilitation and development of infrastructure. The involvement of Programme Against

Malnutrition, a hybrid between a parastatal and an NGO, in distribution of “food security packs” consisting of seed and fertilizer, is evidence of that commitment. Government has also embraced the concept of agricultural diversification, particularly in the drier southern tier of the country. It is encouraging farmers to grow sorghum and millet, as well as introducing cassava cuttings.

More recently, the Zambian Government set aside funds to tap the massive potential in irrigation, but to date few projects have moved beyond the planning stage. Funding has also been set aside to establish the Crop Marketing Authority (CMA) that will build up the food security stocks and ensure that farmers have better prices at which to sell their produce. An introduction of a floor price for maize was announced in May 2003, but it remains premature to investigate how this may be affecting the current marketing year.

Within the last two weeks of May 2003, Government announced (a) that there is to be no free distribution of food relief this year, and (b) that DMMU is to be relieved of its mandate to distribute food relief, which now passes to MACO, the Ministry of Agriculture and Cooperatives. The statement against free general distribution is not opposed by WFP; both Government and WFP recognize that there is no large-scale food emergency this year, and that efforts should focus on recovery. Properly targeted geographically and socio-economically, such recovery programs will provide beneficiary households a much-needed buffer, to use in order to cope better – preferably independently – when the next drought occurs.

6.2 Food aid programmes by WFP and NGOs

WFP’s emergency response programmes through its NGO partners have focused on the southern tier districts, those most affected by the 2001-02 drought. Its distribution of food relief (maize and beans) has been an important component of people’s access to food, especially during this recent lean season. In Kazangula, Monze, Siavonga, Luangwa, and Choma districts, WFP relief exceeded one-third of the District’s own production of cereals plus cassava in the 2001-02 crop year.

However, at this juncture it is important to note that in all these districts except for Choma, own-production plus WFP relief amounted to less – and in three of the remaining five districts less than half – of the SPHERE-recommended calories from carbohydrate sources, i.e., 1 470 Kcal/person/day. It is likely that WFP assistance staved off distress – especially since much of the food was delivered during the lean season. It is also fair to contend that WFP assistance undoubtedly protected household and productive assets, of benefit to the drought-impacted population. Livestock, for example, the sale of which is normal to generate income in much of the southern districts, would not have had to be sold at cut-rate distress prices.

Various INGOs, NGOs, and Churches independently acquired and distributed an estimated 14 000 tonnes of food since the declaration of the emergency. Details of commodities, as well as where and to whom distributed, remain difficult to obtain in sufficient detail to provide any meaningful information.

WFP also undertook food-for-work (FFW) initiatives. Last year, WFP’s FFW component provided close to 5 000 tonnes of food to 61 520 households engaged in reviving agricultural productivity via two avenues: First, FFW as normally practiced, i.e., basic community infrastructure rehabilitation (e.g., improving access roads, rehabilitating or constructing fish ponds, dams, and wells); second, and more innovatively, promotion of conservation farming methods. Conservation farming allows people to cultivate a bigger portion of land with minimum tillage. It progressively reduces the amount of labour and inputs needed, and increases yields compared to an equal area of land cultivated under conventional means. WFP assistance was provided largely in the months prior to the rainy season, when fields need to be prepared.

6.3 Vulnerability and coping mechanisms

a. Overview: sources of livelihood and livelihood patterns

Livelihood patterns in rural Zambia generally revolve around the production of cereals. Several livelihood zones dispersed across the country are reliant on income derived from inland fisheries, and several, including especially in the west/southwest, are dominantly livestock economies. Wild or forest foods, as well as licit and/or illicit hunting, play a role as direct food sources, and as sources of income.

Note that several of the livelihood strategies now employed are erosive in the medium- to long-term. The April 2003 vulnerability assessment encountered cases where net mesh-size in several fisheries has decreased, with the implication that the resource has already been depleted. Poaching, will have serious impact on the nation’s nascent tourism industry, for without wildlife, Zambia’s potential to attract tourists will be seriously impaired. Charcoal production, in combination with traditional patterns of agriculture among the

Northern Province's Bemba people, has resulted in the loss of large tracts of woodland. The result could jeopardize agricultural activities; the loss of soil organic matter could lead to increased levels of land degradation.

b. Livelihoods across socio-economic groups

Wealth rankings for the 1 448 respondents of the household questionnaire were derived from 7-day food frequency recall, using the IFPRI finding of close association between food frequency and food security,³ and the further assumption that food security in turn is closely related to local levels of *relative* poverty. One important observation is that the prevalence rate for relative poverty is highest in the cereals cluster (22.7 percent), and considerably lower in the mixed (9.9 percent) and cassava (9.5 percent) clusters.

Female-headed households on average are able to produce just two-thirds of the yield enjoyed by male-headed households. Since there are no statistical differences in the effective dependency ratio between female- and male-headed households, it is the absence of an adult male that seems to make the most difference. This is also reflected in wealth ranking, since female-headed households are poorer than their male-headed counterparts; on average, they own half the livestock of their male-headed counterparts; they eat highly nutritious foods less frequently than households headed by males; they support more orphans than do male-headed households, yet they may receive lower levels of food relief.

Finally, based on a prevalence rate of just 0.006, the April 2003 vulnerability assessment extrapolates that there are only 9 046 child-headed households (<15 years) in all of rural Zambia.

c. Urban areas

Zambia is the third most highly urbanized country in Sub-Saharan Africa. Of its total population, nearly 40 percent is estimated to live in urban areas, and the Central Statistical Office estimates urban growth to be 2.6 percent per year. The country has eight major towns with populations near to or in excess of 150 000; five of these are in the Copperbelt province. Combined, the Copperbelt towns, with an estimated 2003 population of 1.4 million, are larger than Lusaka, with an estimated 1.14 million persons.

Vulnerability to food insecurity brought on by inadequate livelihood streams during these inflationary times is prevalent in the high-density compounds of Lusaka and Copperbelt towns. In the latter, the collapse of manufacturing and of the mining sector has had profound negative consequences on household livelihoods, social safety-nets, and communal well-being. A March 2003 vulnerability analysis mission found that targeted food assistance programs are necessary to maintain prior levels of human development reached.

d. Rural coping strategies: income

There are a large number of income-generating strategies rural households practice across livelihood zones. Several factors emerged from the April 2003 VA. First, sales of cereal and tuber crops are dominated by mixed- and cassava-producing livelihood zone clusters, while sales of fish, highly variable in the percent of households engaged in income generation across zones, is almost universal across the country, as is sale of handicrafts. There is only one livelihood zone where casual labour is not recorded as one of the three most important income-generating strategies. Sale of livestock dominates in the drier areas of the cereal-producing cluster, while sale of poultry – a quick way to earn a little money – occurs nationwide. The growing and sale of cotton and tobacco mostly occur in tandem, and again the drier areas of the country – the cereals cluster – dominate in this regard. This heterogeneity of income-generating strategies is evidence that if external experts focus on own-production of staple foods, it is a fundamentally myopic view of household food security.

The Food Economy group found substantial income generation occurs via informal cross-border activities. There has been somewhat of a boon for farmers living close to the Congolese border. Key informant interviews along the Zambia-Angola border reveal that "theft" is a coping strategy increasingly employed in the last year. Livestock plays an important role in income generation, more so in some zones than in others. The April 2003 vulnerability assessment found that in all cases except for (small sample-sized) Zone 8, herd and flock sizes remain robust.

³ Hoddinott, J. and Y. Yohannes, 2002. *Dietary Diversity as a Food Security Indicator*. FCND Discussion Paper no. 136. Washington, D.C.: Food Consumption and Nutrition Division, International Food Policy Research Institute.

e. Coping strategies: education/school drop-outs

Of the total sample of 1 448 households, 143 (9.9 percent) had one or more child previously enrolled in primary school drop out during the past 12 months. However, contrary to expectations, girls are slightly less likely to drop out than are boys: 5.5 percent of all girls ages 5-14 (n=1 333) have dropped out compared to 6.7 percent of boys in this age group (n=1 439).

f. Coping strategies: healthcare/acute illness

Acute illness (a household member who has been ill during the past two weeks) is reported to have affected at least one person in 1 157 of the 1 448 households sampled (80 percent). There are no statistically meaningful relationships between acute illness and: wealth group; livelihood-zone cluster [location]; and age of household head.

When ill, by far the preponderance of households, regardless of wealth ranking, seek out formal health care as their primary recourse. While all wealth rankings had some households who reported that they do not seek medical assistance of any kind, this is true more for the poor than for the wealthier households. Of the 24 percent of households who did not seek *formal* healthcare for an acutely ill member, over 60 percent of the poor and mid-income, but only 36 percent of the better-off, report this to be the case due to a lack of money to pay for services.

g. Differences in rural coping strategies by wealth ranking

Since coping strategies are considered to be responses to exogenous or endogenous stress(es), it is not surprising that the April 2003 VA found that poorer households engage in a greater variety of coping strategies and to a greater extent of involvement in them than do wealthier households. Wealth-related interactions were visible. For example, only wealthier households are able to afford the initial costs of sending a member away to town, or further afield. And since the poor own fewer livestock, the fact that a larger percentage of wealthier households have sold livestock should come as no surprise. Fortunately, sales of productive assets, while higher for the poor than the other rankings, remain at very low incidence levels.

6.4 Food consumption patterns and changes in dietary intake

Among livelihood zones, households employ a variety of food consumption patterns to meet members' caloric requirements.

A number of items are worth highlighting. First, the fact that small amounts of tea and non-locally brewed alcoholic beverages are broadly consumed is evidence that there is some degree of purely discretionary expenditure available; tea, after all, also requires purchase – there is no local cultivation. This suggests that there is little in the way of extreme food insecurity among the general population. It is also apparent that groundnuts are widely consumed across the country (they are an ingredient frequently added to the vegetable “relish” that accompanies *nshima*), except in livelihood zone 9; however, this zone compensates for the subsequent reduction in fat and protein intake by having the highest frequency of milk consumption in the country. Too, every zone in Zambia has access to fish, either in dried form or fresh, or both; frequency of consumption (and by inference, the quantity consumed) is highly variable, however. High-calorie local brews are also consumed nationwide, with the apparent exception of Zone 10, up in the far northwest corner of the country in the cassava cluster, with low levels of cereals own-production. This zone, although with a small sample size, also has the lowest consumption of fats; it is possible, putting together the evidence, that isolation has a significant role in explaining these variations. Sectors of the districts of Zambezi and Chavuma were cut off by floodwaters from the rest of the country at the time of enumeration; other parts of Zambezi are road accessible, but those enumerators who travelled there report the state of the highway to be abysmal.

Wild foods are consumed in 15 of the 20 livelihood zones in various amounts. The type of wild food is seasonally dependent, but knowledgeable locals report that wild foods in their full variety persist over the entire year. Game meat, while infrequently consumed, occurs in the diets of 6 of the 20 zones. Caterpillars and other insects form a significant intake in one zone, and minor additions in seven others.

One additional finding is that female-headed households consume foods higher in proteins, micronutrients, and vitamins less frequently on a weekly basis than do their male-headed counterparts. And paradoxically,

despite the general finding that elderly-headed households are more likely to own more livestock than younger households, and are more likely to meet their SPHERE energy (from carbohydrates) requirement, they also consume foods higher in proteins, micronutrients, and vitamins less frequently on a weekly basis than do younger households.

6.5 Health and nutrition status

a. HIV/AIDS by district

District-wise prevalence rates were reported by the Department of Health Services (DHS) in 1999. A map of these figures shows prevalence to be highest along major highways, and on the Zambia-Malawi border. The following year, DHS announced revised figures that significantly reduced rural HIV+ rates, but these data are available only at the Provincial level.

b. Links between HIV/AIDS and vulnerability

One of the postulated impacts of HIV/AIDS on agriculture is the loss of productive labour. It is assumed that households affected by HIV/AIDS would tend to leave uncultivated land normally under production as a result of a household labour shortage. In the April 2003 VA, respondents were asked whether during the last growing season they left land uncultivated that was usually cultivated. Some 63 percent of households stated that land was left uncultivated. These households were then asked why they left land uncultivated; responses were elicited as affirming or rejecting each of several possible answers. The four most common reasons given by these households for leaving land uncultivated was "lack of labour" (41 percent), "lack of money to hire labour" (33 percent), "unavailability of animal draught power" (33 percent) and "lack of fertilizer" (29 percent).

There was a significant difference between households who reported the death of a chronically ill adult and who stated a lack of labour as reason for limiting cultivated land (25 percent) compared to households who did not lose an adult member and gave the same reason (13 percent; $p = .002$). However, no such association was found among households reporting a chronic illness among its members.

The fact that the death of an adult has an association with labour deficits, while the presence of a chronically ill person does not, suggests other causative reasons. First, it should not be forgotten that the staggeringly high HIV/AIDS rates in Zambia are largely an urban phenomenon. Much lower rates occur in rural areas, no matter which year's prevalence data are assumed to be "correct."

Due to increased expenses and reduced incomes, it is also reasoned that rural households affected by HIV/AIDS will have less resources available for agricultural inputs (chemical fertilizer, seeds etc.). Households with a chronically ill adult were significantly more likely to indicate a lack of fertilizer as a reason for leaving land usually cultivated, uncultivated.

Disturbingly, households with a chronically ill adult were significantly more likely to remove a child from school (15 percent) compared to households without a chronically ill adult (9 percent). Even more significant is the fact that households that have taken in orphans are more likely to remove children from school (23 percent vs. 7 percent). Efforts that emphasize conservation farming, including minimum tillage operations, the development of new labour-saving technologies (see for instance the wipe-weeder),⁴ and the development of new varieties of crops, should be supported. Such efforts will mitigate the impact of HIV/AIDS in rural areas by assisting households affected by HIV/AIDS to become more food secure.

c. Nutrition status – recent trends

The malnutrition issue is not found in the acute dimension, but rather in the nexus between poverty – and its corollaries of ignorance, poor sanitary conditions, inadequate responses by health networks, and shortfalls in education⁵ – and chronic malnutrition. In 1995, chronic malnutrition affected 47 percent of core rural poor

⁴ A device developed by the Conservation Farming Unit in Zambia.

⁵ Under IMF pressure to cut government expenditure, the national budget for education fell to 9.1% of total spending in 1992 from 13.4% in 1985. High registration fees at health centers have discouraged their use, leading to a decline in immunizations for measles, whooping cough, diphtheria, and tuberculosis. These are all diseases which have now resurfaced as major killers in Zambia. *A Case for Reform, Fifty years of the IMF and World Bank.* Oxfam Policy Department, Oxfam, UK and Ireland, 1995.

households and 41 percent of urban households.⁶ UNICEF reports that chronic malnutrition (stunting) of Zambian children under-5 to be, at 59 percent.

6.6 Food aid requirements in 2003/04

Table 5 shows the districts where limited relief food assistance, or general distributions may be needed during the 2003/04 crop year and the proportion of the population affected

Table 5. Zambia: Affected Districts

District	Province	% of Total Population in need of food assistance
Chama	Eastern	51
Monze	Southern	16
Mpika	Northern	15
Chinsali	Northern	15
Sinazongwe	Southern	18
Kazangula	Southern	15
Itezhi-Tezhi	Southern	15
Luangwa	Lusaka	23

The population affected fall into two distinct livelihood-zone clusters. The southern group will require food assistance in the form of cereals, although it is possible that the Government's increased promotion of cassava in Southern Province may result in a greater acceptance of cassava flour as an alternative. The north-eastern group is shared between the cereals and cassava clusters, with the similar possibility of acceptance of either staple.

However, it is important to note that 2 years of successive disaster have had a significant impact on food security at the household level. While general distributions may not be required in real significance, re-establishing household assets and household food security will be necessary.

6.7 Non-food needs

a. **Seeds, fertilizer, livestock, and other agricultural inputs**

As might be expected, the April 2003 VA showed that the poor have a much more difficult time in accessing seeds and fertilizer, with inability to afford these inputs being the predominant cause. In regard to geography, lack of seeds is a dominant reason for limitations on production in the cereals zones (almost certainly brought about by the need to replant maize a second, or even a third time in Southern Province), while in the mixed livelihood-zones cluster, respondents report a lack of fertilizer to be the primary limitation to production. Neither input is cited as a dominant limitation on production in the cassava cluster.

b. **Water and sanitation**

Information on potable water sources and the site of disposal of human waste was collected in the key informants survey. If the 68 villages enumerated are fully representative, we must conclude that, nationally, water supply is mostly unsafe at the source: 31 percent is drawn from a river or lake, and 27 percent from an unprotected shallow well. Only 21 percent of villages visited had a borehole pump, while 16 percent had a protected shallow or deep well.

⁶ wbIn0018.worldbank.org/dg/povertys.nsf/0/29634643a1be8a0785256b22005c3e44?OpenDocument

CONCLUSION

In summary, while Zambia's overall food production this year seems satisfactory, chronic poverty in both rural and urban areas of Zambia coupled with successive years of deficit production and rise in the HIV/AIDS pandemic, makes access to adequate food extremely difficult. The focus of assistance should, therefore, depart from emergency relief to recovery. WFP's Food-for-Work (FFW) programmes for 2003/04 will include the creation and preservation of assets such as water control and harvesting infrastructure, natural resource conservation, skills upgrading in conservation farming, basic environmental and sanitary works, aquaculture, horticulture and fish farming promotion, and HIV/AIDS and gender awareness. Thus, food aid will be used primarily as an incentive for targeted households to invest time and resources in asset creation and rehabilitation. During the October-March lean season, WFP assistance will contribute to meeting the minimum daily energy requirements.

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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