



GROWING COFFEE  
IN ZAMBIA

## ACRONYMS

CBD	Coffee Berry Disease
CBZ	Coffee Board of Zambia
DRC	Democratic Republic of Congo
FQM	First Quantum Minerals
GDP	Gross Domestic Product
IACO	Northern Coffee Corporation Limited
ICO	International Coffee Organization
KII	Key Informant Interview
NAPSA	National Pension Scheme Authority
NCCL	Northern Coffee Company Limited
NDP	National Development Plan
SNAP	Second National Agricultural Policy
WARMA	Water Resources Management Authority
WCB	Workman's Compensation Board
ZCGA	Zambia Coffee Growers Association
ZDA	Inter-Africa Coffee Organisation
ZEMA	Zambia Environmental Agency
ZNFU	Zambia National Farmers Union

## EXECUTITIVE SUMMARY

Organized coffee production in Zambia began just before World War I with the British South Africa Company planting coffee in Chilanga, South of Lusaka. However, the conditions were unfavourable, leading to the uprooting of the trees in 1923. In contrast, coffee planted in Mbala thrived, motivating nearby settler farmers to take up coffee cultivation. By 1933, over 150 hectares were established, producing an average of 200 kilograms of clean coffee beans per hectare. The Ikumi Smallholder Coffee Growers Cooperative was formed in 1958, and by 1960, 80 small-scale growers had planted 16 hectares.

The World Bank-supported Coffee I and II Projects significantly boosted Zambia's coffee production for export. The Coffee I Project, effective from July 1979, aimed to achieve self-sufficiency in coffee production and diversify the agricultural base. Despite its premature termination in 1987 due to IMF austerity measures, the project stimulated interest in coffee growing among smallholder farmers. The Coffee II Project, starting in March 1992, aimed to expand Zambia's agricultural base and diversify foreign exchange earnings. It planned to establish 3,300 hectares of irrigated coffee plantations, capable of producing 4,700 metric tons of high-quality Arabica coffee annually. The project faced challenges due to policy changes and privatization but managed to revive interest in coffee cultivation among small-scale farmers.

### **Recent Trends and Potential in Coffee Production**

Coffee production in Zambia has seen a significant decline since 2009, dropping from a high of 7,000 metric tons in 2003-2005 to around 250 metric tons today. Current production is mainly from one large farm in Northern Province. This decline underscores the urgency of reviving the coffee industry and encouraging small-scale farmers to engage in coffee production. Coffee is recognized for its potential as a carbon sink, contributing to climate change mitigation. The Zambian government has instituted policies to promote coffee production as part of a green economy initiative, emphasizing the planting of shade trees alongside coffee.

### **Coffee Species and Varieties in Zambia**

Zambia primarily grows *Coffea arabica*, known for its high quality and value in the specialty coffee market. Traditional varieties in Zambia include SL 28, Catimor 129, and SL34, known for their high cup quality but not drought tolerance. Semi-dwarf varieties like Caturra and Catimors are resistant to diseases and have high yield potential, though their cup quality is considered fair compared to traditional varieties. It is recommended to grow conventional varieties in higher elevations and semi-dwarfs in lower elevations, with adaptations based on specific conditions.

### **Zambia's Coffee Export Performance and Competitiveness**

The International coffee market in key coffee consuming countries of Europe, the USA, Japan and China is booming, with annual growth exceeding 70% and per capita consumption in excess of *US\$100 billion annually*. This growth is driven by the launch of innovative ready to drink offerings in southeast Asia and Oceania, changing consumer preferences, the rise of coffee culture and increased availability of coffee products. Nescafe for instance, a major coffee trading house has launched Nescafe

Dolce Gusto Neo and Nescafe Famers Origins which has resonated well with young consumers<sup>1</sup> This trend is expected to continue, creating a prime market for Zambian coffee.

Zambia's country's coffee marketing system, managed by the Zambia Coffee Growers Association (ZCGA), eliminates middlemen, ensuring better returns for farmers. Despite a drop in production, Zambia's coffee is known for its high quality, fetching prices in excess of USD 4,500 per metric ton.

### **Technical Requirements for Coffee Production**

High yields of quality coffee can be achieved throughout Zambia, particularly in Northern, Luapula, Copperbelt, and North-Western provinces. These regions have high rainfall, good water supply for irrigation, stable temperatures, and minimal frost risk. Coffee thrives on sandy-loam-clay soils with a pH of 5-6.0, found in many parts of Zambia. The elevations suitable for coffee range between 950-1,700 meters, with ideal temperature ranges of 13-29°C.

Irrigation is crucial due to Zambia's single rainy season and the increasing unpredictability of weather patterns. Well-drained sites are essential for coffee cultivation. The choice of coffee variety and good management practices significantly impact yields and quality. With proper irrigation and management, coffee yields of up to 3 tons per hectare have been achieved by several growers in Zambia.

In summary, Zambia has the potential to revive its coffee industry through strategic investments in irrigation, capacity building, and adoption of appropriate technologies. The country's vast water resources, suitable climatic conditions, and commitment to sustainable practices provide a strong foundation for expanding coffee production and boosting export earnings.

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<sup>1</sup> Nescafe Website 2024

## OVERVIEW OF ZAMBIA AGRICULTURE SECTOR

The Agriculture sector contributes 45% of Zambia's GDP and about 30% of its export earnings, while employing over 80% of the nation's work-force. Despite its importance, agriculture is very much affected by inadequacy, seasonality and unreliability of rainfall and periodic droughts. It is for this reason that irrigation is considered necessary for the growing of any crop including coffee as a cash crop. Irrigation provides for protection against droughts, a means of stabilising crop production and assurance of a good harvest.

Zambia has a total irrigable development potential of 2.7 million ha. However, only 3500 hectares are under improved irrigated agriculture. Coffee production, apart from land suitability requires irrigation for it to be profitable. Because of the high cost of irrigation water mobilization and irrigation equipment and for the purpose of optimizing the investment made, it is normally recommended to grow coffee in areas of high rainfall potential to help minimise on the need for irrigation and hence the cost of producing it. The high rainfall regions of Northern, Luapula and North-Western provinces are generally considered suitable areas to grow coffee at least cost given the prolonged rain season that reduces irrigation cost.

It is not possible to grow coffee in Zambia without at least supplementing it with some form of irrigation. This entails the provision of irrigation infrastructure, institutional arrangements, and capacity building - both technical and financial - that is consistent with irrigated coffee area. Notwithstanding the foregoing the coffee sub-sector's high strategic potential and the priority given to its expansion, still faces considerable challenges and constraints including:

- a) Inadequate long-term financing for coffee (at 5-10 years in duration);
- b) Inappropriate technologies;
- c) Land insecurity;
- d) Limited knowledge of Zambians wishing to get into coffee production;
- e) Low level of coffee production skills of the farmers.
- f) Low agricultural water use efficiency; and
- g) Lack of proper agricultural management plans.

Despite these challenges and constraints, opportunities abound in Zambia for production of high-quality coffee under irrigation. The country is endowed with vast water resources and is divided into six (6no.) water basins or river catchments namely: Zambezi, Kafue, Luangwa, Luapula, Chambeshi and Tanganyika. These basins hold bulk of the surface and groundwater in the country for all uses of water including irrigation

### 1. BRIEF HISTORY OF THE COFFEE INDUSTRY IN ZAMBIA

Organized coffee production in Zambia dates back to just before the First World War, when the British South Africa Company planted coffee at Chilanga, South of Lusaka. The seed planted at Chilanga, was of unknown origin. Unfortunately, the environment at Chilanga was not favorable for coffee, the trees did not grow well and were

therefore uprooted in 1923. On the other hand, [6] part of the seed brought in had been sent to Mbala where eight hectares of coffee was established.

Mbala proved to have favourable conditions for coffee cultivation, as a result a good first crop was harvested. The high price in London at the time motivated near-by settler farmers to seriously take up coffee growing. It is said that by 1933 more than 150 hectares of coffee was established by these settlers out of which 70 hectares produced a crop averaging 200 kilograms of clean coffee beans per hectare.

Fast track to 1958, the Ikumi smallholder Coffee Growers Cooperative was formed at Nakonde and by 1960 there were 80 small-scale coffee growers who planted a total of 16 hectares.<sup>1</sup> It is after this experience in growing coffee at Nakonde and Mbala that the UNIP Government 1968 decided to develop much bigger estates at Ngoli and Kateshi.

### **Coffee I and II Projects**

Zambia's pursuit to increase coffee production for export was greatly enhanced by the implementation of the World Bank supported **Coffee I and II Projects**.

The first Coffee I Project became effective in July 1979 whose broad objective were:

To achieve self-sufficiency in coffee production

To diversify the agricultural base by producing exportable surpluses

To achieve the foregoing objectives, the coffee I Project relied on harnessing state-owned and managed coffee estates i.e. (i) involving LINTCO and Zambia Coffee Company Ltd (ZCCL). Unfortunately, the Project was prematurely terminated in May 1987 when the government withdrew from the International Monetary Fund (IMF) austerity programme.

However, despite this set back, the Coffee I Project under LINTCO and ZCCL did record some success in their respective mandates and the learning experience succeeded in stimulating interest in growing coffee among smallholder farmers who managed to establish 200 hectares of coffee.

This success led to the follow up Coffee **II Project**, which was approved in November 1987. But due to some policy differences between Government and the World Bank this project only became effective in March 1992. By this time there was a new government that came to power in October 1991. The new government liberalized the economy and put in place an acceptable privatization programme as a precondition for increased World Bank support. Both LINTCO and ZCCL were in that regard privatized. The Coffee II Project objectives as drawn up during the preparation stage prior to 1987 were:

- a) To expand Zambia's agricultural base
- b) To diversify the country's source of foreign exchange earnings
- c) And as amended inclusion of horticultural /floriculture

To achieve these objectives, it was planned that 3,300 hectares of irrigated coffee plantation would be established capable of producing annually 4,700 metric tons of high quality arabica coffee,

The Project, had seven-year implementation life span, and was expected to:

- Provide credit to farmers for coffee production and processing through participating commercial banks

- Strengthen the Ministry of Agriculture's Coffee Research Unit
- Strengthen LINTCO's coffee Development and Marketing Division by providing technical assistance, training and vehicles to facilitate the provision of extension services to small scale Farmers
- Provide funds to ZCCL and to strengthen its management and expand coffee area
- Provide technical assistance, equipment and training to strengthen coffee marketing
- To improve the horticultural/floricultural industry

The change of government at the end of 1991 and the planned privatization programme that was going to include LINTCO and ZCCL at the beginning of 1992 brought about some drastic review and change in the Project objectives and modalities of implementation. A Project Management Unit was constituted under the Ministry of Agriculture to undertake the coordination of the Project.

Early in 1992 LINTCO discontinued offering extension and marketing services to smallholder farmers and the 200 hectares of coffee that had been established were abandoned and nearly all the trees died by 1994. The smallholder farmers abandoned included 20 farmers who had established nearly 20 hectares of coffee under Ipafu Irrigation Scheme on the Copperbelt.

The Coffee II Project closed on 31 December 1996 instead of the original Project date of 30 June 1999. This was because all agricultural project activities were incorporated into the newly ***structured Agricultural Sector Investment Programme (ASIP) of the Ministry of Agricultural.***

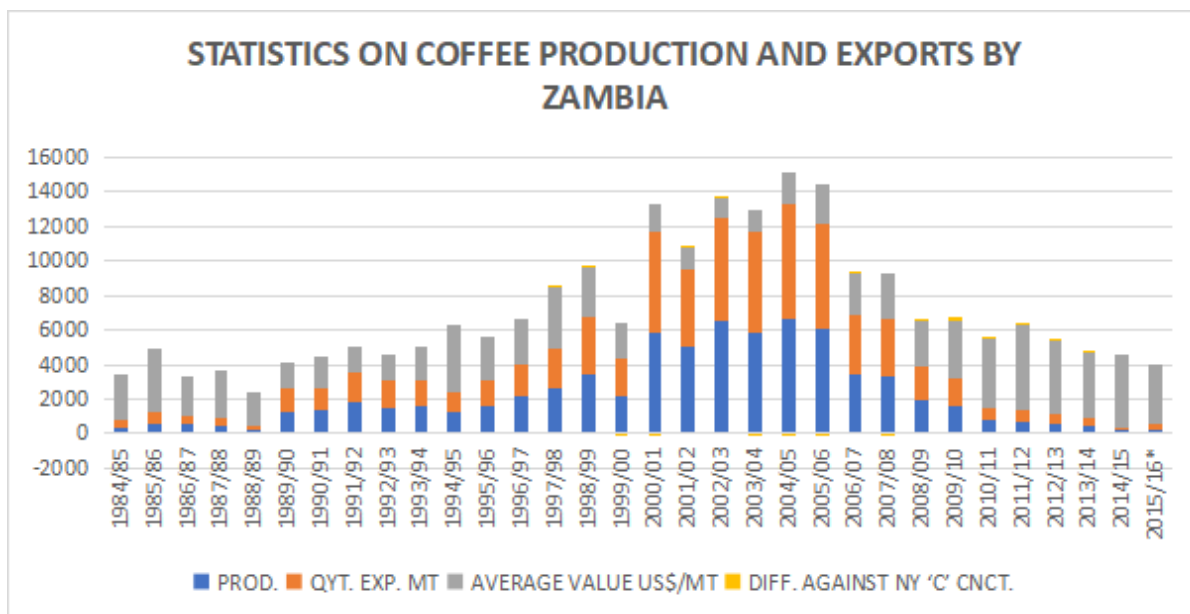
At the end of coffee II Project, the following were achieved:

- Interest in growing coffee among smallholder farmers was positively revived.
- About 1,500 hectares against the planned 3,300 hectares of coffee were established.
- exportable production rose from 330 Mt in 1984 to a projected 10,000 Mts in 2005.

Zambia Coffee Growers Association Limited, formed in 1984, had become an effective representative and marketing agency for members.

The expansion of agriculture base and diversification of source of foreign exchange.

The Coffee II Project saw the growth in the number of small-scale farmers and coffee growers as shown by the statistics below show:



**NOTE:**

The drop in production in the season 2005/06 was due to the drought experienced in 2004/05 season, whose effects and full impact were reflected in yields for the 2006/07 season. Worse still in the same season a number of our growers pulled their coffee trees, opting to grow easier crops like wheat, largely prompted by lack of long- and short-term finance.

The differential against the New York C is the premium one gets above the terminal market; Say for Arabica coffee on the New York Coffee Terminal Market in the 2010/2011 season, with a weighted average differential of US cents +19.95; the Spot December 2011 trading position on the New York Coffee Terminal Market closing on the 19<sup>th</sup> of August 2011 at a position of US cents 269.85/lb, translates on this day to an average price for Zambian coffee of **269.85 + 19.95 = US cents 289.80/lb = USD6,389.00/mT.**

Coffee production in Zambia has dropped drastically since 2009. From the high of 7,000 mts in 2003 -05 down to pre-1984 levels of 250 mts. today. Current production is mainly from one large farm in Northern Province. This situation necessitates for the revival of the industry as matter of urgency. We need to encourage small-scale farmers to get into coffee production. The advent of climate change adds to the impetus for coffee as a crop of choice given its climate mitigation potential as major carbon sink.

The potential for coffee as carbon sink has been recognized by Government as an opportunity, and has thus instituted various policies and measures to encourage its production as part of the promotion of the green economy where rural communities are being encouraged to plant trees as matter of priority. It is estimated that coffee when planted with shade trees will absorb from the atmosphere an equivalent of five (5 tonnes/hectare) of carbon. The other benefit is that coffee grown under shade trees also serves to lower micro-climate temperatures due to the increased canopy cover. It's for this reason that Government has also identified coffee which is a tree crop, when planted and grown with other shade trees as a natural fit to the agenda of mitigating against climate change.



## GENERAL CONSIDERATIONS ON COFFEE SPECIES



With its green leaves, white scented flowers loved by the bees and red and green fruits, the coffee tree is an attractive, elegant plant that has contributed to the growth of the new World (Brazil, Colombia and central America), apart from being important to the economies of twenty-five (25) Coffee producing countries. The Economies of Rwanda, Uganda, Kenya and several other African countries derive seventy (70%) Gross Domestic Product (GDP) from Coffee. In sum Coffee growing is a major economic crop for 20 to 25 million farmers in 70 producing countries between the tropics<sup>2</sup>.

### Coffee Botany and Genetics

There are two main coffee species, *Coffea arabica* which is the species that produces Arabica coffee and grows between the tropics<sup>3</sup> and Robusta which is the species that produces *Coffea canephora* whose origins are said to be from Uganda. It prefers hot, humid equatorial -type climates, where cocoa and banana are also grown. It does not like highland areas.

Arabica was the first type of coffee to be cultivated. It thrives in cool climates without frost, and grows best in the highland ecologies of tropical regions like North-Western Province.

Though similar in vegetative appearances, the difference between the two species of coffees lies in their end usage. Arabica, is the premier of the two species, is used mainly in the Café trade where its brewed and sold and at times blended with the poorer Robusta, on account of its aroma and sweetness. It's the premier coffee traded in the speciality market of international coffee trade and always fetches a high price compared to Robusta. By law Zambia only produces Arabica<sup>4</sup>.

Currently Zambia has a very narrow base of coffee varieties. Replicated variety testing in different locations is needed to determine which varieties fit in different environments.

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<sup>2</sup> Coffee Terroirs and people

<sup>3</sup> Coffee, Terroirs and people

<sup>4</sup> Coffee Act of 1989 which regulates the production and Marketing of Coffee in Zambia

### Traditional Varieties

Coffee varieties SL 28 catimor 129 and SL34 are considered traditional in Zambia. They are tall and both are not drought tolerant. Traditional varieties are known for high cup quality. In the high elevation areas, they are known to have performed well and produced high yields.

### Semi Dwarf Varieties

The semi dwarf varieties are *caturra* (a natural mutation of the variety of bourbon), *catuai* (a hybrid between *caturra* and *mundo novo*) or are hybrids *caturra* and *c. canephora*. The hybrids of *caturra* and *c. canephora* are collectively called catimors. All catimors are semi dwarfs in habit and have a resistance to rust and some tolerance to coffee berry diseases (CBD). The catimors have high yield potential but cup quality is considered only fair compared to the high quality of traditional varieties.

With regard to production, it is recommended that the conventional varieties are grown in higher elevation areas, while the dwarfs are confined to the lower elevations. However, the premise should be adapted on a case-by-case basis as in certain instances the semi dwarfs have been grown successfully higher elevation areas.

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### **Table 2: Zambia Export performance**

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<sup>7</sup> Coffee Act of 1989 which regulates the production and Marketing of Coffee in Zambia

Crop year April/March	Production (Mt)	Export (Mt)	Average Price (USD/Mt)
1990	1,329	1,300	1,856
1991	1,791	1,771	1,495
1992	1,530	1,513	1,526
1993	1,582	1,536	1,972
1994	1,231	1,195	3,856
1995	1,580	1,543	2,485
1996	2,167	1,884	2,574
1997	2,628	2,285	3,529
1998	4,030	3,358	2,810
1999	2,400	2,179	2,041
2000	5,868	5,832	1,542
2001	5,000	4,531	1,288
2003	6,500	5,811	1,288
2004	6,800	6,584	1,847
2005	6,500	6,100	2,218
2019	1,582	1,582	3,500
2020	2,880	2,880	3,944
2021	4,202	4,202	4,400
2022	3,900	3,900	4,400
2023	3,606	3,606	4,160

*Note: Price data includes all coffee exported, main and grinder (small grades)*

Prices being ex Lusaka. It is however projected to achieve in 2023/24 total export record of around 3,606.00 Mts with an average price of US\$4,160.00/Mt ex Lusaka.

### **Zambia's competitiveness on the International World Coffee Market**

If today Zambia had 40,000 Mts of coffee, we would sell it all. We have the market but very little produce. The industry has the basics (which just needs beefing up) in terms of infrastructure and manpower to run a successful coffee industry. Since 1985 when Zambia entered the international coffee market. The markets have been able to take whatever Zambia produces, more so that Zambia is known to be an origin that produces high quality and high value arabica coffee products. Zambia is in the specialty coffee markets for Japan, South Korea and the USA, which markets only take high quality and high value coffee products with prices in excess of US\$4,500 per metric tons. It will therefore be opportune for Lunga coffee to be in production soon.

The Zambian coffee industry, at its behest in 2004/2005 exported the largest quantity of 6,500 Mts. At that time, it used to have on its books a total of 75 large scale (with land over 10 hectares under coffee) coffee growers and 500 small scale farmers (with land less than 10 hectares under coffee) who though did not contribute much to the industries exportable production, has since then dropped to 8 large scale growers and zero small scale farmers. **(Annex 8).**



### *Properly Managed Coffee Farm - Living Hope Farm - Ndola*

Placing the above in perspective, our largest exportable production so far is the annual production of one large Brazilian coffee farmer. Rwanda and Burundi are each in excess of 25,000 Mts of exportable green bean production per season and which coffee in both countries is by small scale farmers with an average production of not more than 300 Kgs per hectare.

The total hectareage under coffee as an industry is 2,985 with 2,800 of this belonging to the only 5 estates of NCCL in Kasama and Mbala and the balance 185 hectares shared among 7 family farms.

Though coffee requires water throughout the year and we only have one reason, Zambia does have plenty of surface water which can be used for irrigation by our small-scale farmers who with good management can produce between **1,000 to 1,500 Kgs per hectare** as opposed to the world small scale coffee farmer average of less than 300 Kgs per hectare. Large scale farmers on average produce **2,500 to 3,000 Kgs per hectare**. With plenty of surface water, it is feasible to indigenize coffee production as presently not a single Zambian farmer is into coffee production. The more reason why Lunga coffee farm should be supported.

At present 97% of Zambia's exportable production is by one large estate grower namely, Northern Coffee Corporation (NCCL) in Kasama and Mbala, Northern Province. With Lunga coffee should it be supported things could change. This is where Prospero comes hand with its partner impact capital investment.

### **Marketing Zambian Coffee on the International Coffee Market**

Zambia's coffee marketing system is the best and unique in that it eliminates middle men who in many coffee countries have been known to disadvantage small scale farmers considerably. In Zambia, the Coffee Growers Association (ZCGA) to which Lunga coffee project (LCP) is member to the farmer owned organisation. Meaning that Lunga farm by being a defacto member becomes a shareholder to the company.

ZCGA possess a state-of-the-art milling equipment which processes individual farmer's coffee and markets on behalf of the farmer. The ZCGA pays the farmer for its produce

once the coffee has been exported less processing and Marketing fees. This system has worked very well for the country without complaints from growers. Apart from much needed foreign exchange earned for the country and the monetary benefits that accrue to the farmers the coffee bushes together with the shade trees will absorb large amounts of carbon dioxide. Lunga coffee could benefit from the carbon trade which coming on stream, there by earning additional income apart from green coffee export proceeds.

The coffee growers Association markets Zambian coffee by way of regular fax/email auctions which bids are submitted based on representative advance samples sent to buyers on an approved buyers list. Usually the highest bidder is successful, but the Association reserves the right to make counter offer should it consider the price(s) offered inadequate.

In addition, the Association also markets coffee or forward shipment on description basis for those members who so desire. All marketing operations take place under the supervision of the Associations marketing committee, which is composed of active coffee growers.

Finally, a comprehensive export shipping and documentation service is also offered in which, all a grower has to do is deliver his or her coffee to a ZCGA nominated warehouse and all else is taken care of, right through to the collection and payment of export proceeds. In all circumstances individual growers retain ownership of both coffee and proceeds. There is a small but growing domestic market for roasted coffee but 99% of all coffee is fact exported. Technically by defacto being a member of ZCGA Lunga coffee is automatically linked to the international trade in coffee.

## **TECHNICAL REQUIREMENT FOR COFFEE PRODUCTION**

### **Growing Conditions for Coffee in Zambia**

High yields of quality coffee can be achieved throughout Zambia where conditions are suitable. However, Research has shown that weather conditions in Northern, Luapula, Copperbelt and North western Provinces are more suitable for coffee production for the following reasons:<sup>8</sup>

- a) There is high rainfall, spread over a longer period of time.
- b) Areas can be found which have plentiful supply of good quality water for irrigation throughout the dry season.
- c) Temperature fluctuations only occur in isolated areas.
- d) Frost is less likely to occur.

### **Land and Soil properties**

Coffee thrives on a wide range of soil types, provided that it is managed properly. Sandy-loam-clay soils found in many parts of the country with no incidence of frost are suitable for growing coffee in Zambia, as long as there is adequate water for irrigation, which is in abundance in North Western Province. Irrigation is necessary as Zambia only has one rainy season, but which due to climate change is getting shorter (November to/March the following year). The rest of the year is dry and since coffee requires moisture through the year, irrigation is a necessity. The pH of the soil should preferably be between pH.5-6.0. Although coffee can be grown successfully at PH levels down to pH 4.7.

### **Elevation and Temperature**

The elevations where coffee is grown in Zambia ranges between 950-1,700 metres. Mwinilunga is at 1,500m therefore suitable.

The temperature range should ideally be within the limits of 13°C-29°C. A temperature of 26°C at night is optimal. From the point of view of vegetative growth, the less variation beyond these limits the better. Long periods outside this range will have adverse effects on growth.

### **Topography**

Areas with gentle and evenly slopping topography are plentiful throughout Zambia and these should be chosen for coffee. Coffee should not be planted on the low slopes of valleys, as cold winds and occasional frosts can occur. Crinkle leaf and 'hot and cold' conditions are serious problems in cold sites.

### **Water requirements**

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<sup>8</sup> Coffee Production Manual -Principles and Approved Practices

It is not possible to grow coffee in Zambia without irrigation. Irrigation is essential for good establishment growth and high yields. Growing coffee without irrigation systems in place is risky given the unpredictable weather pattern in the sub region.

The coffee field should be sited near a source of water, which supplies sufficient water during the period April to November when the need for irrigation is greatest. North Western Province is fortunate owing to the presence of adequate sources of water in the dry season.

## **Drainage**

A well-drained site is one of the most important considerations for growing coffee. If the site is not naturally drained, provision must be made to provide adequate drainage.

## **Technology assessment**

Yields and quality of Arabica coffee are largely determined by choice of particular variety for particular area of the region and management of the crop. This includes good seed source and timely sowing. As a rule of thumb, the semi-dwarf coffee varieties (e.g. Catimor F6, Catimor 129) are suited for low lying areas while the conventional(bourbon) varieties such as SL28 are suited for the high lying areas like Mwinilunga which lies at 1,500 meters' elevation above sea level. With good irrigation, yields of on average 3 tonnes per hectare of mature coffee have been achieved by several growers in Zambia.

## **Summary**

Growing coffee in Zambia is feasible and promising, given the favourable agro-climatic conditions, supportive market dynamics, and potential socio-economic benefits. With strategic planning, investment, and sustainable practices, Zambia can establish a thriving coffee industry contributing to economic growth and community development.