ZIMBABWE'S AGRICULTURAL REVOLUTION REVISITED

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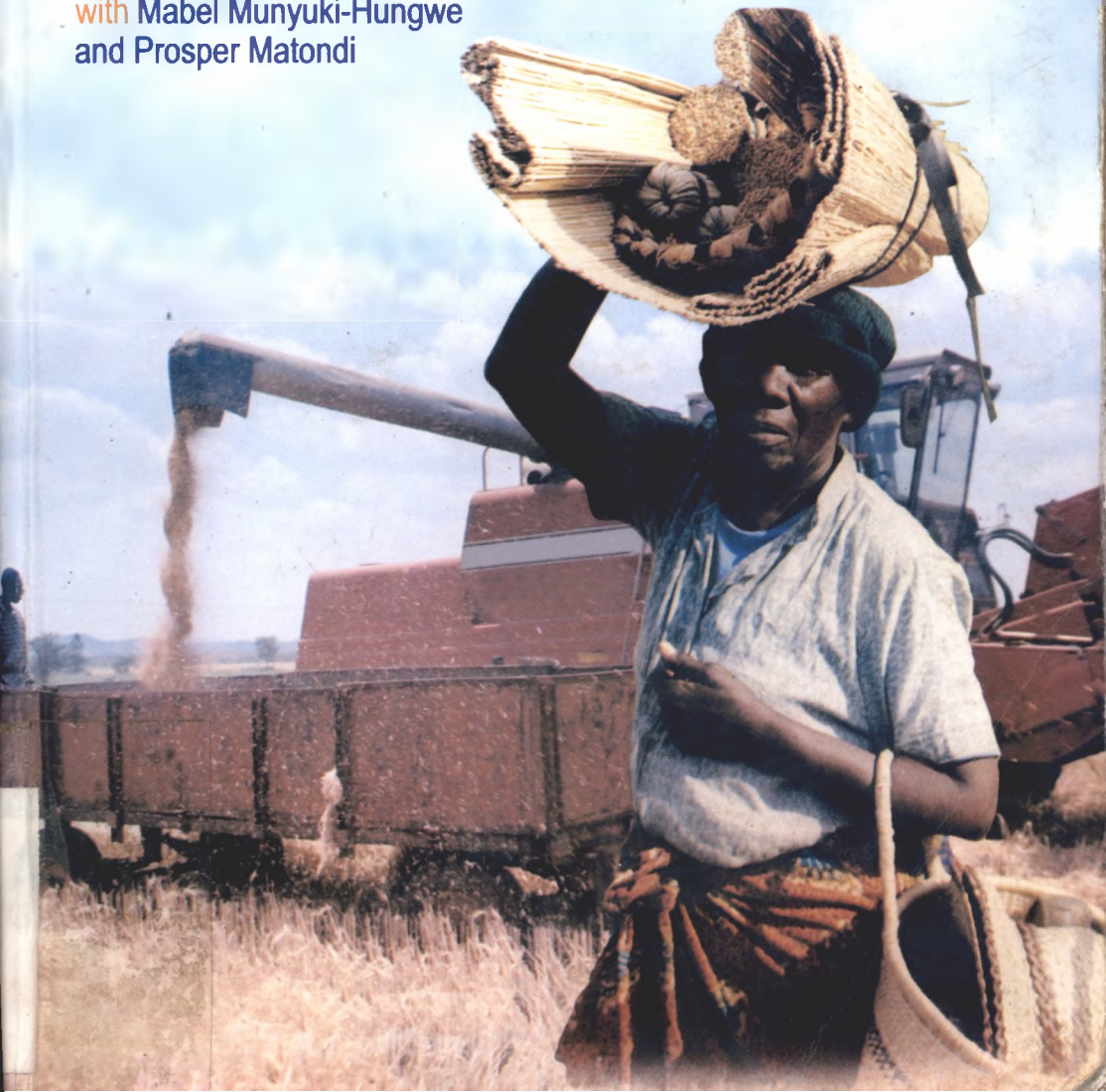

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Due to state interventions at independence there was a dramatic increase in production of maize and cotton by communal farmers

33

Synthesis

Carl K. Eicher, Patrick Tawonezvi and Mandivamba Rukuni

The first edition of this book in 1994 covered a century of Zimbabwe's agricultural development experience because of the growing recognition that development is a long-term process that unfolds over decades, generations and centuries (Rukuni and Eicher, 1994). During Zimbabwe's first decade of independence in the 1980s, Zimbabwe's agricultural development experience was praised by scientists, practitioners and donor agencies in southern Africa and, in particular, by the United Nations[264] because both smallholders and large-scale commercial farmers were flourishing. However, the success of the 1980s was followed by a number of setbacks in the early 1990s. As a result, the editors of the first edition reported in 1994 that Zimbabwe's overall experience in food and agricultural development since independence represented a 'qualified agricultural success story' (Eicher and Rukuni, 1994). They also concluded that it remained to be seen whether Zimbabwe would find the political resolve to make the necessary political, institutional and economic policy changes to bring about a third agricultural revolution that was broad-based and of benefit to farmers and rural people in both favourable and unfavourable natural resource regions.

Zimbabwe's first agricultural revolution from 1950 to 1980 was based on increased cotton, maize and tobacco production by a few thousand white commercial farmers. The second agricultural revolution was fuelled by increased smallholder production in high-rainfall regions in the 1980s. However, Zimbabwe's second agricultural revolution was undermined by a failure to develop efficient and financially sustainable institutions (credit, research and marketing) to sustain the smallholder maize production boom of the 1980s. These unsustainable institutions were coupled with some errors in maize pricing policy and in managing the food economy, especially between 1985 and 1992 (Jayne *et al.*, 2002).

Even in 1994 it was acknowledged that it was easy to articulate goals of development, such as freedom from hunger and broad-based smallholder-led

[264] Zimbabwe was awarded the United Nations 'Award for the end of hunger' in 1990. This was a significant achievement given the devastation of hunger and famine in other African countries, such as Ethiopia.

development, but goals are free and outcomes are not fore-ordained. The achievement of a goal such as smallholder-led agricultural growth requires dedicated political leadership, financial and human resources, efficient markets, technological innovation, a favourable macro-economic environment for agriculture and farmer support services that are efficient and financially sustainable over time (Rukuni, Blackie and Eicher, 1998). But history has shown that Zimbabwe is now facing a serious agrarian crisis.

Let us begin by pointing out the multiple roles of agriculture in development. In 1960 sixteen African nations regained their political independence and embarked on the preparation of national development plans and agricultural strategies. This explains why 1960 is often called the beginning of independence in Africa even though Mozambique and Angola gained their independence in 1975 followed by Zimbabwe in 1980, Namibia in 1991 and South Africa in 1994. Over the past four decades, a great deal of knowledge has been accumulated about the strategic role of agricultural growth in promoting national economic development at an early stage of a nation's economic development (Timmer, 1998). Increasing the rate of growth of agriculture is especially important in poor countries where daily per capita incomes are one to two dollars per day, food accounts for 40 to 50 per cent of family expenditure and two-thirds of the population depend directly or indirectly on agriculture and the rural economy for their livelihoods. Since most countries in Africa are at an early stage of institutional and scientific maturity, it behoves us to examine the role of agriculture in Zimbabwe's development followed by an analysis of Zimbabwe's agricultural crisis that commenced from 2000.

There is a great deal of confusion over agriculture's role in development. What is the role of agriculture in Africa's development? To feed people? To end hunger? To earn foreign exchange from export crops? To generate government revenue? Or to serve as a market for products from the industrial sector? Many agriculturalists contend that the overarching mission of farmers is to produce food and livestock for a growing population.

Many food activists and non-governmental organizations contend that the primary mission of agriculture is to end hunger. For example, following the death of around one million people in Ethiopia's horrendous famine of 1985, a number of international conferences were convened on ending hunger in Africa. However, most of the conferences ended by issuing unrealistic declarations about ending hunger by the year 2000 by increasing food production and/or redistributing the world's food reserves to ensure that all people have access to an adequate diet of about 2,100 calories per day. Agriculture can make a strategic contribution to family and national food security and ending hunger but ending hunger also depends crucially on a growing national economy that increases family income providing the means (the effective demand) for families to purchase food. Finally, a growing national economy generates jobs and

tax revenue to finance health care and safety nets, such as food for work and school feeding programmes.

Nobel Laureate T. W. Schultz (1964) argues that to call on agriculture to help end hunger is 'selling agriculture short'. Why? Schultz, an agricultural economist, argues that agricultural growth can make five strategic contributions to economic development:

1 Contributing to food security and political stability by generating a reliable food surplus from domestic food production, storage and imports;
2 Feeding a growing rural and urban population and meeting the changing food consumption preferences of society over time;
3 Increasing agricultural exports to generate new income streams for farmers and increase employment and foreign exchange earnings;
4 Generating government revenue by taxing farm production, especially exports, to finance education, health and industrial development.
5 Serving as a market for industrial products (for example, bicycles, farm machinery, and so on).

But what is Africa's record on agricultural growth? Even though the World Bank has repeatedly urged African nations to step up agricultural growth rates to 4–5 per cent per annum, half of the 45 countries in sub-Saharan Africa achieved an annual agricultural growth rate of less than 3 per cent from 1990 to 1999. We shall now synthesize the highlights of Zimbabwe's first and second agricultural revolutions and then address Zimbabwe's agricultural crisis from 2000.

The first agricultural revolution: commercial farmers – 1950 to 1980

Cecil John Rhodes colonized Zimbabwe in 1890 but after failing to find gold deposits on a par with those in South Africa, the white settlers turned to farming in the mid-1890s. The settler (commercial) farmers slowly and methodically established farmer and commodity associations, developed a political power base, and promoted agricultural knowledge development through information and research, pricing, marketing and credit policies that directly and indirectly discriminated against black smallholders. The settlers subsequently secured the passage of various land ordinances in parliament to gain control over prime agricultural land. This explains why at independence in 1980, Zimbabwe inherited a dual agrarian structure of roughly 5,000 white-owned commercial farms and 700,000 communal and small-scale commercial farms.[265]

[265] See Rukuni, chapter 2; Matondi and Munyuki-Hungwe chapter 3; Muir-Leresche, chapter 4; Mehretu and Mutambirwa, chapter 5; Moyo, chapter 6 and Makadho, chapter 7.

The main goal of the white settler farmers from the 1890s to the 1960s was to gain control over prime agricultural land and depress the earnings and profits of small-scale farmers. The achievement of control over prime land guaranteed white economic dominance and black poverty during the 90-year colonial period from 1890 to 1980. This strategy of depressing the profits of small-scale farmers and tenants and the wages of farmworkers was also pursued historically by large-scale farmers, in collaboration with the state, in Namibia, South Africa, Kenya, Algeria and many countries in Latin America.

With the urging of the commercial farmers, the government of Zimbabwe, as Rukuni points out in chapter 1, took a major policy decision around 1920 to invest in the development of the following prime movers of agricultural development:

- New technology that is produced by public and private investments in agricultural research;
- Human capital and managerial skills that are produced by investments in schools, training and on-the-job experience;
- Biological capital investments (such as improving livestock herds, planting, spraying, pruning and maintaining coffee trees) and physical capital investments in infrastructure such as dams, irrigation, and roads;
- Farmer-support institutions such as credit, fertilizer, seed distribution systems and marketing.

The development of the prime movers over the 1920–1950 period laid the foundation for the first agricultural revolution by commercial farmers who drew on these prime movers to increase maize, cotton and tobacco production from 1950 to 1980 (Tawonezvi and Hikwa, chapter 8). For example, research on hybrid maize was initiated at the Harare Research Station in 1932. After 28 years of research, Zimbabwe developed the famous SR52 maize hybrid that increased on-farm maize yields by 40 per cent without fertilizer (Eicher and Kupfuma, 1988). The availability of the new maize hybrids, nitrogen fertilizer and other factors increased average maize yields and contributed to Zimbabwe's first agricultural revolution from 1950 to 1980. Likewise, government cotton research over the 1920–1950 period laid the foundation for a large increase in cotton production by commercial farmers beginning in the late 1950s and early 1960s. However, the direct benefits of the first agricultural revolution were garnered by a few thousand commercial farmers who controlled half the arable land in the country at independence.

The second agricultural revolution: smallholders – 1980 to 1990

At Independence in 1980, the core agricultural institutions – research, extension, credit and marketing – were primarily serving commercial farmers. But

the new majority-rule government directed the managers of these institutions to devote primary attention to meeting the needs of smallholders. And peace in the countryside enabled smallholders to bring land abandoned during the 1965–1979 civil war back under cultivation and gain access to expanded government credit programmes and newly constructed marketing depots in rural areas.

Zimbabwe's second agricultural revolution was spearheaded by smallholders growing cotton and maize, primarily in higher-rainfall areas, from 1980–1986 (Rohrbach, 1989; Blackie, 1990). Smallholders doubled national maize production from 1979 to 1986 and tripled their sales to the Grain Marketing Board over the same period. However, no single factor – infrastructure, seed, fertilizer or credit – accounted for this dramatic increase in smallholder production. The sharp increase in maize and cotton production in the early 1980s is partially attributed to the strategic political decision of the new government in 1980 to 'level the playing field' and help smallholders expand production and gain easier access to grain and cotton buying depots.

Zimbabwe's first and second agricultural revolutions have highlighted the payoff to long-term investments in the prime movers of agricultural development that enlarge the productive capacity of the agricultural sector. Mashingaidze (chapter 16) reports that maize research was primarily financed by the government until the commercial farmers built the privately-financed Rattray-Arnold Research Station in 1983. Most of the investments in Zimbabwe's prime movers were public but private investments played an important role in agricultural research, seed distribution, processing and marketing. By 2004, maize research was mainly financed by private seed companies. Cole and Cole (chapter 18) report that tobacco research shifted from private to public and then to a blend of private and public financing. Mariga (chapter 17) points out that in the space of a decade (1979–1989), smallholders increased their share of seed cotton production from 20 to 62 per cent of national output. By 2004, smallholders produced 80 per cent of the national cotton crop. Sibanda and Khombe (chapter 20) document the long period of time it takes to develop appropriate livestock technology for commercial farming conditions and lament the current paucity of livestock research findings for smallholders.

Without question, smallholders benefited from efficient farmer-support institutions that were pioneered and nurtured by commercial farmers over many decades. For example, Zimbabwe's seed supply system was the crown jewel of seed systems in Africa (Rusike and Eicher, 1997). The origin of this success story goes back to 1940 when a small group of commercial farmers established the Seed Maize Association to produce certified maize seed under the supervision of the Ministry of Agriculture (Havazvidi and Tattersfield, chapter 10). Later, the association cooperated with the government and released the first commercial hybrid seed in 1949 followed by the famous SR52 maize hybrid in 1960. Private black and white farmers produce hybrid maize seed which is

marketed through Seed Co Limited in Zimbabwe and Seed Co Group Limited throughout Africa.

Compared with other African nations, the government of Zimbabwe exercised remarkable leadership in maintaining the continuity of public expenditure on the prime movers from roughly 1950 to 1980. It also took unusual political leadership and determination to reinvest a portion of a nation's agricultural surplus (for example, tax revenues from tobacco exports) back into the prime movers in order to increase the total output of the agricultural sector in the future (Timmer, 1998). This combination of government risk-taking in research and development and continuity of support for the prime movers served Zimbabwe well. After all, 'a nation that cannot sustain long-term institution building and human capital improvement will never have a highly productive, industrialized agriculture' (Bonnen, 1998: 276). Zimbabwe's experience demonstrates that the agricultural sector can make a strategic contribution to national development by producing food, driving down the real cost of food in the average diet, generating jobs and foreign exchange, and by serving as a market for the products of the industrial sector.

But it is important to pose the question: Was the average Zimbabwean any better off in economic terms in 1990 than at independence in 1980? The statistics show that because population growth outstripped the economic growth rate in the 1980s, the average Zimbabwean was worse off in 1989 than in 1982. This decline in per capita income is not what was envisioned in the government's 'growth with equity' strategy that was released in 1982, soon after independence. The objectives of the strategy were summarized by government as:

> '... to pursue and implement policies based on socialist, egalitarian and democratic principles in conditions of rapid economic growth, full employment, price stability...' (Government of Zimbabwe, 1981: 1).

To summarize, the government's post-independence economic strategy and socialist ideology failed to improve the welfare of the average Zimbabwean in the 1980s. In 1988, Zimbabwe had an average per capita gross national product of U$650, a life expectancy of 63 years, near universal primary education and a population of 9.3 million (World Bank, 1990).

The agrarian crisis of the 1990s

Confronted with economic stagnation in the early 1990s, the government in consultation with multilateral donors (International Monetary Fund and World Bank) mounted an economic structural adjustment programme in 1991 to 'free agriculture from the state' by encouraging local and foreign private investment. Privatizing government parastatals and reducing government expendi-

ture and the size of the bureaucracy were key objectives of the programme. Although there was drought in 1992 and again in 1995, agricultural production held up remarkably well during the first half of the 1990s. In fact maize production in 1996 (2.6 million metric tonnes) was the highest of the decade. Therefore we have to go beyond drought to unravel the critical issues responsible for Zimbabwe's agrarian crisis, especially from 1998–2004.

Zimbabwe's smallholder food production success story from 1980 to 1985 unravelled in the late 1980s and during the drought of 1992. Jayne *et al.* (2002) contend that Zimbabwe's food (maize) crisis of the early 1990s was caused by drought and a combination of policy mistakes, including a 25 per cent reduction in real (inflation-adjusted) maize producer prices from 1985 to 1991. This sharp reduction in farm producer prices reduced farm profits and commercial farmers responded by reducing the area under maize by an average of 18,000 hectares per year after 1981. On the other hand, smallholder maize area increased in the early 1980s, peaked in 1985 and then declined from 1985 to 1991. Most of the decline in smallholder maize cultivation occurred in the lower-rainfall areas, thus contributing to household food insecurity in these areas. The maize subsector had also been constrained by stagnant yields and smallholder credit repayment problems. The idea of a strategic grain reserve remained just an objective without practical measures to effect or implement it. Finally the government indirectly contributed to the 1992 maize crisis by failing to heed the reports of early warning experts and make timely purchases from surplus producing countries.

Other factors contributing to the agrarian crisis of the 1990s included the collapse of farmer-support institutions such as research, extension and credit to assist smallholders.[266] In addressing institutions, there is a need to understand what they really are. The definition of institutions includes institutions and organizations and the rules and conventions that govern them. The starting point is to conceptualize the basic agricultural support institutions as a *system* of interactive development institutions that communicate and cooperate with each other for the purpose of helping farmers increase agricultural productivity (Mosher, 1966; Rukuni, Blackie and Eicher, 1998).

Agricultural research should be broadly defined as the capacity to generate, borrow and adapt a stream of new technology to increase the production of food, livestock and export commodities which are capable of meeting family food security needs, generating new income streams for farmers, rural employment opportunities and foreign-exchange earnings. In chapter 8, Tawonezvi and Hikwa report that at independence, the Department of Research and Spe-

[266] The development literature offers little guidance on the organization, sequencing and financing of basic agricultural services for smallholders (Eicher, 1999; Kayizzi-Mugerwa, 2003).

cialist Services was carrying out productive research programmes on maize, cotton, tobacco and livestock that were primarily serving commercial farmers. Following independence, the department was charged with giving priority to meeting the needs of communal farmers and adhering to the presidential directive of black advancement. The department responded to this new challenge by appointing a black director in 1983, introducing on-farm research in communal lands and launching new research projects on agroforestry and small ruminants. But the department was not given the financial resources to carry out its broadened mandate. Also, turnover of staff was high in the 1980s because of the 25 per cent reduction in its real (inflation-adjusted) budget from 1980 to 1990, lagging salaries and the difficulties of developing improved technologies for communal farmers in heterogeneous research environments.

Turning to agricultural extension, Pazvakavambwa and Hakutangwi (chapter 9) report that the Department of Agricultural, Technical and Extension Services pragmatically experimented with a number of alternative extension models.[267] The idea of merging public extension and research was mooted around 1997/98 as part of the government policy to reduce the size of the public service. The merger process started in 2001 by setting up a new organization called the Department of Agricultural Research and Extension. But the merger was difficult to achieve in practice because of bureaucratic and political battles and the practical difficulties of merging and coordinating research and extension at the field level. It remains to be seen whether the Department of Agricultural Research and Extension will succeed because mergers of different institutional cultures often take decades to mould and achieve their original goals. Zimbabwe is trying to re-orient its extension service to serve communal farmers by experimenting with new extension models, changing extension officer to farmer ratios and developing cost-effective ways of serving groups of farmers. Meanwhile the privatization of the delivery of agricultural inputs and extension services is proceeding.[268]

Turning to the complex topic of agricultural credit, Chimedza (chapter 14) and Zumbika (chapter 15) report that the Agricultural Finance Corporation helped smallholders expand smallholder maize and cotton production in the 1980s. The number of Agricultural Finance Corporation loans to communal farmers increased from 18,000 in 1980/81 to 100,000 in 1986 but then fell to 50,000 in 1990 and 353 in 1998. Two main reasons contributed to this sharp decline. The first was the high delinquency rate which was partially a function of a too rapid build-up of the number of loans that were problematic and high risk in their management. Secondly, recurrent droughts increased the risk of borrowing and the rate of default.

[267] See Eicher (2002) for a discussion of on-going extension reforms in Mozambique.

[268] See Byerlee and Echeverria (2002) for case studies of the privatization of agricultural research and Rivera and Zijp (2002) for case studies of the privatization of extension.

Zimbabwe's mixed record in managing its food economy and reforming its core agricultural institutions to support smallholders reveals how difficult it is to develop financially sustainable institutions to serve hundreds of thousands of scattered smallholders, especially those in resource-poor areas. There is need for a large increase in applied research on crafting cost-effective and sustainable credit institutions to serve farmers in resource-poor areas. Research is also needed on the following: optimal public/private arrangements in agricultural research and seed delivery systems; efficiency and financial sustainability of alternative extension models; and ways for non-governmental organizations to assist in agricultural and rural development programmes.

To summarize, the 1990s can be described as a decade of disappointment caused by inflation and a low rate of economic growth, especially from 1998 to 2003 and the collapse of its core rural institutions. Zimbabwe is now mired in a deep agrarian crisis because of the drought of 2001/02 and 2004/05, unfavourable macro-economic policies for agriculture, the high transaction costs associated with the land resettlement programme and the HIV and AIDS pandemic (Yamano and Jayne, 2002). In 2001, Zimbabwe's per capita gross national product was U$480 and the life expectancy at birth was 40, down from 61 in 1992 (World Bank, 2003: 235).[269]

Getting agriculture moving again: seven challenges

In looking ahead we assume that the fast track resettlement programme will reach its goal of settling 300,000 families (1.5 million people) on former white-owned commercial farms. However, based on experience in other parts of the world, it will take three to five years or perhaps longer for the new settlers to regain the total production levels of the main crops as they were in the 1996/97 farming season.[270] A global comparison will help clarify this important point. In 1952 Bolivia undertook a massive land reform and it took a decade before smallholder production regained the pre-reform level of total agricultural output. Although it sounds easy for Zimbabwe to hire several thousand additional extension agents to assist[271] the newly settled farmers, it will be difficult for the government to provide the budgetary support and a minimum package of farm inputs to families with little or nothing in terms of physical goods.

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[269] Life expectancy fell to 36 years in 2004.

[270] Holding constant all other factors that influence production, such as drought and economic growth. By 2004, Zimbabwe was still experiencing a downward trend in economic growth.

[271] Many experienced extension agents have left for the private and non-governmental organization sectors. Moreover, a large population of professional Zimbabweans, estimated at three million, live in the diaspora. An economic crisis and low remuneration in the public sector has had a knock-on effect on morale of experienced personnel.

The bottom line is that the ultimate success of the third agricultural revolution crucially hinges on the ability of the government to launch a 'fast track smallholder improvement programme' that can turn former landless people into farmers producing an economic surplus for the market. The most critical crops are maize, cotton and tobacco. Maize accounts for roughly half the calories in the diet of the average Zimbabwean and cotton is a smallholder success story par *excellence*. The role of tobacco is especially critical because Brazil, Vietnam[272] and other countries are poised to move in and take over Zimbabwe's tobacco trade if Zimbabwe does not move quickly enough to restore the production of high quality tobacco. Tobacco for export markets also plays three critical roles in the national economy. Tobacco accounted for 5 per cent of the gross domestic product, 30 per cent of annual foreign exchange earnings and around 35 per cent of total agricultural employment. But policy attention must also be given to stimulating the growth of the entire rural economy because empirical data show that around 25 to 40 per cent of smallholder income in most countries in Africa is derived from off-farm employment.

Mobilizing the energy of settlers

The gravity of the agrarian crisis in Zimbabwe can be captured in a simple statistic: smallholder agricultural production per capita was lower in 2000 than it was in 1988. Therefore the first challenge for Zimbabwe is to put its political muscle, policy attention and government expenditures behind the creation of a third agricultural revolution that is based on a broad-based strategy to increase agricultural and rural non-farm production and employment in both favourable and low-rainfall areas of the country. The ability to bring about a third agricultural revolution is critically dependent on strengthening the prime movers of agricultural development, the development of favourable macro-economic policies for smallholders, a wholesale restructuring of its agricultural support services and regaining Zimbabwe's ability to compete in regional and global markets.

The centrepiece of the third revolution is the mobilization of farmers and in particular new settlers by helping equip them with the tools and knowledge to increase food, livestock and cash crop production, and rural employment, which in turn will generate effective demand for food and products from the industrial sector. Nevertheless, we should keep in mind that the agricultural technology-driven model of development is only applicable to rural households that have access to adequate land and resources (credit, draught animals, access to markets) to adopt new technology and employ the available family labour in farming. Households without adequate land or sufficient resources to meet their family food security needs from farming will need to find off-farm

[272] Zambia and Mozambique are beneficiaries of the white farmers from Zimbabwe.

jobs in the private sector or in government – through financed rural employment programmes and support from food safety-nets. Finally, increased access to education will be necessary to equip some members of farm families for out-migration to the industrial or urban sectors. Ultimately, rural poverty cannot be reduced unless there is agricultural growth coupled with a growing national economy capable of generating jobs for rural–urban migrants.

Managing the food economy

The second challenge is learning how to manage the food economy in years of surplus and years of deficits. Zimbabwe's difficulties in managing its food economy in the 1990s point out how hard it is for a government to develop the capacity to simultaneously manage short-term food emergencies and long-term food supply issues in good as well as bad years. Critical management issues include the maintenance of incentive producer prices for farmers, generating a stream of new technology, restructuring farmer-support institutions to serve smallholders and managing a national grain reserve. Zimbabwe's zigzag pattern of maize price controls illustrate the policy dilemma of balancing producer demands and consumer food satisfaction. Zimbabwe abolished price controls on maize meal in 1993 under a World Bank/International Monetary Fund structural adjustment loan and then reintroduced price controls in 1993, and in 2001 it banned all private maize trade. However, in Zimbabwe and other countries in southern Africa, many of the fundamental elements of the market reform process either remain unimplemented or they are revised after a few years. Clearly there are some tough, unanswered questions over the role of the state and the market (private investors) in grain marketing after more than two decades of independence.[273]

The immediate priority is to rebuild maize production in favourable areas while simultaneous steps are taken to develop better maize, sorghum and millet varieties and crop resource management practices for smallholders in resource-poor areas. The need to focus on increasing maize yields and production in favourable areas is obvious: it is a proven strategy with low risk. Also, expanded maize production could lead to lower maize prices which would indirectly benefit rural and urban net food buyers in favourable and unfavourable areas (Rukuni and Eicher, 1987).

Land policy: putting people to work

The third challenge is putting people to work on the land (Rukuni, 1994). Land was arguably the single most important reason leading to Zimbabwe's War of Liberation, and it is a burning issue that will not fade away (Moyo, chapter 6;

[273] For a comparative study of the theory and practice of reforming agricultural markets in Africa, see Kherallah *et al.* (2002).

Makadho, chapter 7). Soon after independence, Blackie asserted that the unbalanced agricultural sector that evolved under successive Rhodesian governments needed urgent overhauling if it was to continue to play its part in the development of the country. This task was both the most expensive and the most explosive (Blackie, chapter 31). There are two critical issues in the debate over land. The first is whether there is an economic case for a smallholder model to replace Zimbabwe's dual agrarian structure.

The economic case for land reform and a smallholder-dominated agrarian structure is supported by empirical evidence that small farms generally have a higher value of output per unit of land and capital than do large farms (Dorner, 1992: 23). Numerous studies have shown that small farms are generally more efficient than large farms because family members receive a share of the profits and therefore have more incentive than hired workers to work hard. Also, there are no hiring and search costs for family labour. Each family member assumes a share of the risk in smallholder farming. The issue of land tenure in this context is critical to giving farmers a sense of ownership and the confidence to invest their resources in farming.

Nevertheless, several commodities have special processing requirements which lend themselves to production on large farms and plantations. This warrants that some large strategic plantations should be preserved from land acquisition. For example, cut sugar cane must be processed within 12 hours or the sugar is lost to fermentation. This explains why sugar factories in many (but not all) developing countries manage their own plantations and carefully stagger the planting and harvesting of cane to keep the sugar factory operating throughout a large part of the year. Also, bananas grown for export must be put in a cold room within 24 hours of their harvest to arrest further ripening. This explains why some of the world's largest banana companies own large plantations that are operated by hired managers. Local and national markets, however, can be served through the purchase of bananas from local smallholders (Binswanger and Elgin, 1998).

To summarize, with the exception of bananas for export, sugar cane and a few other crops, there is solid economic justification for a land reform programme which turns land over to smallholders on the basis of political and social equity, efficiency and employment considerations. Zimbabwe's experience in maize and cotton production demonstrates beyond a doubt that smallholders can compete with large farms if they have political support, access to technology, farm inputs and efficient farmer-support services, incentive prices and access to markets.

The second issue that should receive more attention in land debates is the powerful but frequently forgotten role of land policy in rural employment generation – putting people to work. Because of limited job opportunities in urban areas, the agricultural and rural non-farm sectors will have to provide jobs for

a large share of the newcomers to Zimbabwe's labour force in the foreseeable future. Without question, subdividing large farms and turning them into small-scale family farms will help put more people to work in rural areas.

Food versus cash crop debate

The fourth challenge is to embrace and expand cash crops for export. Zimbabwe's smallholder maize and cotton success story adds empirical information to the ongoing debate over the role of food and cash crops in African development. During the 1970s and 1980s, many academics and members of non-governmental organizations contended that cash crops were the 'mother of poverty' and that they exacerbated hunger by diverting land and labour from food production to cash crops. Walter Rodney's widely-read polemic *How Europe underdeveloped Africa* (1974) makes a powerful case against producing cash crops for overseas markets. But yesterday's experience is not an adequate guide for making current policy decisions on whether to produce food, cash crops or both.

Development thinking swung in support of cash crops in the 1990s because of solid evidence that cash crops such as cotton, cut flowers and horticultural products have helped improve the lives of smallholders in Zimbabwe and in many other African countries. Cotton and smallholder horticulture exports, for example, have helped thousands of poor farm families in Zimbabwe increase their food-buying power, pay for school fees and finance investments in oxen and equipment which are then used in producing both food for home consumption and cash crops (Mariga, chapter 17; Heri, chapter 19). But it would be irresponsible to lay down a blanket policy guideline for or against cash crops in southern Africa. What is needed is a case-by-case analysis of the social, political and economic dimensions of cash cropping. Rodney's blanket contempt for cash crops should be replaced by a pragmatic assessment of the likely economic and social impact of each cash crop on a country-by-country basis. However, there is growing evidence that cash crops can play a positive role in increasing the food-buying power of poor farmers and help alleviate rural poverty. The main goal of the Initiative for Development and Equity in African Agriculture (IDEAA) rural development programme in eight countries in southern Africa was to increase smallholder production of commodities for export (Khombe, Munyuki-Hungwe and Tirivanhu, chapter 32). But, as the authors suggested, the promotion of high-value commodities to the detriment of food security crops only works in situations where food markets are functional and competitive.

Generating new income streams from non-traditional exports

The fifth challenge is to generate new income streams from the sale of horticultural produce, particularly cut flowers, temperate fruits, tropical fruits, vegeta-

bles, herbs, spices and essential oils for regional, European and Far East markets. This should also be considered in terms of in-country regional variations such as those provided by the clusters in agro-ecological regions in Zimbabwe. For example, until the land reform programme, the Zimbabwean horticultural industry had grown so rapidly since the 1980s that it became the second largest foreign exchange earner after tobacco (Heri, chapter 19). Foreign exchange earnings increased by an average of 30 per cent per year over the past ten years. Moreover, women proved to be more productive than men in harvesting, grading and sorting horticultural products.

However, the export market for horticultural products and cut flowers is extremely competitive because of changing grades and standards and environmental regulations, especially in Europe which is the target export destination for producers in southern Africa (Reardon *et al.*, 2001). Swaziland, Uganda, Kenya and many other countries in southern Africa are expanding cut flower and horticultural exports by investing in research and market intelligence to find windows of opportunity in global markets. Without question, Zimbabwe's success in raising farm incomes and employment from expanded horticultural exports requires applied research to solve market coordination and quality control issues, keeping abreast of the changing World Trade Organization regulations, facing up to the concentration of horticultural trade in the hands of multinational corporations and supermarkets, and tough competition from Brazil, Malaysia and Vietnam in global markets. For example, Vietnam emerged from a devastating civil war in the 1970s, scrapped its centralized control of the economy, boosted producer prices and aggressively promoted smallholder production and trade. Now Vietnam is shipping rice to Africa and it increased its annual coffee production tenfold (90,000 to 900,000 tons) in the past decade. South Africa is mounting an aggressive campaign to sell its technology (for example, seeds) and agricultural biotechnology inputs throughout Africa (Byerlee and Fischer, 2002).

Since Kenya has several decades of experience in horticultural exports, we cite two examples from Kenya to gain some insights. Homegrown, Kenya's largest horticultural exporter, grows over 90 per cent of its crops on its own farms using sophisticated irrigation systems and greenhouses. The company initially sourced from smallholders but realized it could not control product quality. The cost was 50 per cent higher than the cost of produce grown on large farms because of the waste of produce that failed to meet European Union quality standards. Therefore Homegrown began production on two farms in Kenya in order to control quality by producing all of its produce for overseas markets (IFAD, 2001:195). The second example is smallholder flower production in Kenya. Kimenye (1995) carried out a farm management study of women producing cut flowers for air shipment to the flower auction in Amsterdam. Kimenye found that production problems were of secondary importance rela-

tive to market information and market coordination problems facing smallholder flower producers in rural Kenya who did not have access to a fax or internet service to keep them abreast of daily market prices of flowers in Amsterdam. For example, Kimenye found that smallholder flower growers (mostly women) did not harvest 40 per cent of their flowers during the year of her survey because Kenyan growers lacked reliable and timely information on what type of cut flowers were in demand on the daily flower auction in the Netherlands. Kimenye found that Kenyan smallholders were producing low-valued flowers such as astromedia while growers in other African countries had better knowledge of what type of flowers were in peak demand in Europe at various times of the year. As a result, the female flower growers on farms several hours away from Nairobi were unable to compete with other African countries who were supplying higher-value flowers, such as roses, to the Amsterdam flower auction (a place where flowers are sold by auction and quickly put on aeroplanes for distribution throughout Europe, Japan and North America).

Increasing rural non-farm employment and income

The sixth challenge is increasing rural non-farm employment and income. Various studies have shown that about a quarter to a third of African farm incomes and employment are derived from rural non-farm sources such as trading, processing, building construction, crafts, marketing, and other activities. In chapter 30, Chinyemba, Muchena and Hakutangwi document the significant contribution of women to agricultural and rural non-farm activities and microenterprises and call for greater attention to women in extension, appropriate technology, credit and educational programmes. What can be done to increase rural non-farm employment and incomes? Stack and Sukume (chapter 26) report that many academics and donor experts argue that participatory models of rural development can strengthen local governments, promote self help and raise rural non-farm incomes. What light can Africa's development experience shed on this issue considering that community development, integrated rural development and participatory models of development have been tried in Africa over the past 40 years?

The community development models flourished in Asia and to a limited extent in Africa in the late 1950s but they failed to increase food production and were abandoned in the mid-1960s. Integrated rural development projects in the context of the green revolution were launched in the 1970s but most of these efforts failed after a decade because of their complexity, lack of core income-generating activities, widening social inequities and for a host of other reasons. Today, the third generation of participatory development models has grown into a movement with an uncertain future. The advocates of the new models stress the need to strengthen local governments, promote self-help and participation, improve farmer representation, increase the access of the rural

poor to resources and markets and boost rural non-farm income (Echeverria, 2001; de Janvry and Sadoulet, 2001). But closer examination reveals that many of the new models are similar in form and substance to the failed community development projects of the 1950s.

Country-specific integrated rural development models should be designed by indigenous scholars and practitioners with a learning by doing approach as well as learning from the experience of other countries. Evaluation studies are needed to glean crosscutting insights from both successful and unsuccessful attempts to help smallholders develop farmer and commodity associations. Pilot projects have a crucial role to play in working out how to expand non-traditional exports. In this connection, the IDEAA regional rural development programme represented a pragmatic attempt to assist groups of farmers organize commodity associations in eight countries in southern Africa (Khombe, Munyuki-Hungwe and Tirivanhu, chapter 32). In the final analysis, the ultimate success of community, rural and bottom-up models of development depend on local initiative, local voices, local ownership, and access to technology and markets. All these are hallmarks of a decentralization of power and authority to local governments and farmer associations. However, many agree with decentralization in theory but not in practice. For example, President Nyerere of Tanzania wrote a definitive paper on decentralization and rural development in 1972 but he subsequently spearheaded the drive to import a highly centralized (Chinese style) model of farming (*ujamaa*) which collapsed after a decade.

Nobel Laureate W. Arthur Lewis offered the following sage advice about decentralization:

'• Farmers dislike paying taxes. The remedy for this is decentralization of extension services to local authorities. Decentralization thus raises taxable capacity;
- Decentralization of services both limits demands to what farmers are willing to pay and increases their willingness to pay;
- The chief obstacle to further decentralization is political;
- The real obstacle, to repeat, is not administrative but political'

(Lewis, 1967).

Attacking rural poverty

The seventh challenge is attacking rural poverty. We begin with the bold proposition that an agricultural production revolution will be unable to eliminate rural poverty by itself. Experience in Asia has shown the green revolution was incapable of solving rural poverty problems in the absence of a long-run expansion of rural non-farm jobs and economy-wide economic growth (IFAD, 2001). Policy-makers in Africa can glean some generic policy insights from Asia's experience in dealing with rural poverty over the last 30 to 40 years. In

a pioneering study of combating rural poverty in six countries in South Asia, Singh (1990) reports that economic growth can reduce rural poverty in the long run but the time required is so long that direct and indirect anti-poverty programmes are needed to combat rural poverty in the short run. Singh recommends special attention be directed to helping smallholders expand non-crop production such as dairying, small ruminants, fishing and forestry. He points out that one crossbred cow may do more to raise the standard of living of landless households in India than giving each of them two to four acres of irrigated land in most parts of India (Singh, 1990: 224). There is abundant evidence that smallholder-led agricultural production programmes cannot by themselves eliminate and/or reduce rural poverty. They must be supplemented with economy-wide economic growth, dynamic rural small-scale industries, rural employment programmes and food security safety-nets for the landless and destitute.

To summarize, there is an urgent need for agricultural policy makers and planners in Zimbabwe to develop a strategy for a third agricultural revolution based on a dynamic smallholder-led rural development model which has the capacity to put the landless and underemployed rural people to work and stimulate the growth of the entire rural economy. Special attention should be given to combining policy and institutional reforms aimed at putting people to work on the land and mobilizing the latent production capacity of smallholders and tens of thousands of small-scale rural enterprises that are scattered across Zimbabwe's landscape.

Summary

The indigenous knowledge embodied in the chapters of this book flow from applied research that has been carried out, primarily by local scholars, on Zimbabwe's agricultural development journey over a period of decades. Four broad lessons emerge from this study of Zimbabwe's agricultural development experience, the unexpected agrarian crisis of 1998–2004 and the challenges ahead. The first lesson is the need for donors to stop flooding beleaguered policymakers in Zimbabwe and other countries in Africa with generalized policy advice such as the adoption of structural adjusted reforms and standard institutional models for research and extension. Because of the vast differences in agrarian structures, population densities, human skills, natural resource endowments, rainfall, and availability of technology and market opportunities, there is a need for African countries to seize the initiative and craft their own development strategies. For Zimbabwe this means that its political leadership should take responsibility for solving its own agrarian crisis by developing an agricultural strategy that draws heavily on the well-known ingredients of the second agricultural revolution of the 1980s. The only difference between the challenges

following independence and the 1998–2004 crisis is the number of the settlers who now occupy approximately 12 million hectares of land. Zimbabwean political leaders and policy makers should rely heavily on indigenous knowledge of policies and projects that have failed as well as those that have succeeded over the past two decades because, basically, development is a learning by doing process. Blackie (chapter 31) presents a number of cases where the availability of indigenous knowledge is playing a strategic role in the success of projects. To summarize there is a need for Zimbabwean researchers to develop an indigenous knowledge base that can be used to craft a system of agricultural service institutions and agricultural policies that will help solve Zimbabwe's current agricultural crisis.

The second lesson that emerges from this book is that a nation's comparative advantage is increasingly a function of public and private investments in science, technology and the quality of people, rather than the soil, the sun and rainfall. Therefore it behoves Zimbabwe to rebuild and strengthen its prime movers of agricultural development to create an agricultural science base capable of supporting food and livestock production and to generate new income streams for farmers and marketing firms. The agricultural success of Brazil, China and Malaysia demonstrate that building a strong agricultural science base and a cadre of knowledge workers (public, private and extension workers) can generate high returns to society. Zimbabwe's creation of a strong agricultural science base fuelled the first and second agricultural revolutions.

The third lesson is that Zimbabwe needs to develop a coherent strategy to generate a third agricultural revolution that is focused on helping increase farm and livestock production and reducing poverty among smallholders, in both favourable and resource-poor natural resource regions. The creation and implementation of a broad-based smallholder strategy should be conceptualized as a medium-term (five to ten years) activity that will require public and private sector cooperation, smallholder entrepreneurship and growing participation of farmers and farm organizations in local and national debates on economic issues that affect smallholder production, food security and marketing activities.

The centrepiece of the third agricultural revolution strategy is the provision of technical and economic leadership to help settle and assist 300,000 new settlers to become productive farmers who rapidly develop the capacity to meet their family food security needs and produce quality products for regional and global markets. However, it will take time to regain the total production levels of the 1996/97 season and generate a reliable food surplus through home production, storage and food imports. It should be noted that food aid might be necessary for a few years – even during normal rainfall seasons – to feed the cities and other vulnerable rural groups because this would help cushion the shock during the transition period to production primarily from smallholders.

Fourthly, Zimbabwe cannot rest on its laurels, especially in a competitive global economy where a nation's comparative advantage can quickly evaporate. For example, Zimbabwe's second agricultural revolution in the 1980s stalled in the 1990s. With growing competition from South Africa in regional export markets, Zimbabwe will have to invest heavily in new types of public or private sector partnerships for biotechnology research, inputs and in particular seed distribution and market development, to ensure that Zimbabwe is competitive in regional and global markets.

To summarize, Zimbabwe's agrarian history is unusual in African development experience in that it relied on its own resources (rather than foreign aid) to craft an agricultural science base which fuelled the first and second agricultural revolutions. However, since the publication of the first edition of this book in 1994, the policy environment and prime movers have been seriously eroded to a point where they are incapable of generating a third revolution. The unfavourable macro-economic environment for agriculture and the deterioration of the core rural institutions during the 1990s cannot be repaired overnight. Over the past decade there has also been a major change in thinking about the changing roles of public, private and non-governmental organizations in financing and delivering agricultural services to farmers. For example, the World Bank has withdrawn its support for the training and visit model of extension and is now promoting more pluralistic, decentralized, participatory and privatized models. The government of Zimbabwe urgently needs to develop a five to ten year vision for agriculture and rural development followed by the creation of task forces to prepare papers that can be debated at a national seminar on 'Zimbabwe's third revolution: issues and challenges'. Hopefully the intellectual capital and experience embodied in this book will be of use to the taskforces as they develop a strategy for a third agricultural revolution that will contribute to a better tomorrow for all Zimbabweans.

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