

Food Crops are Cash Crops: a perspective on agricultural policy

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Abstract

Many conventional interpretations of the record present a dismal picture of agricultural performance. In turn, the view that agriculture has been quite stagnant spurs a search for new approaches to “transforming” agriculture (e.g. through The Southern **Agriculture** Growth Corridor of Tanzania (**SAGCOT**) initiative was launched in 2010 (SAGCOT).

It is true that :

- i. Since the early 1970's, export crop production has performed poorly.
- ii. The gap between rural and urban incomes has widened. (However, this is a virtual universal characteristic of economic growth – from the point of view of poverty reduction the rural-urban income gap is less important than the actual growth in rural incomes – in a dynamic economy fast growth is likely to be associated with both a widening urban-rural gap and growing rural incomes.) and
- iii. The rate of growth of rural household incomes has fallen short of what is desirable and possibly achievable.

Nevertheless, there have been profound changes and significant progress in many aspects of the rural economy, with a realistic economic response to evolving market opportunities and significant progress in living conditions. If this perception is correct, it is misleading to characterize the rural

economy and smallholders as inherently “backward” and unresponsive to potential opportunities (which leads to the view that there is a need for a fundamental change in the “mind-set” of small farmers).

The failure of so many agricultural interventions and projects by government and donors cannot be ascribed to an inherent resistance of small farmers to change. For it is not small farmers who have failed to identify and exploit potential development opportunities, but rather the “experts” who have designed and implemented flawed rural programs.

B: Historical role of agriculture

In settler and plantation economies, development of the smallholder economy was repressed by policies to ensure the continuing supply of cheap labour to the expatriate agricultural sector (e.g. in Kenya). By contrast, colonial economic policy in economies without an expatriate enclave, the rural economy was expected to generate export crops (so-called “cash crops”), which played a key role in generating foreign exchange and fiscal revenue (e.g. Uganda). Tanganyika fell between the two classic colonial models, with a roughly even balance between exports from expatriate controlled farms and plantations and African smallholders.

The emphasis placed on “cash” (i.e. export) crops was partly because of the obvious need to generate foreign exchange to fund imports and revenues to fund the colonial state, but also reflected the reality of a very limited cash domestic food market.

Agricultural research and such interventions to support rural development largely aimed to maximize the growth of export crops, and success or failure in agricultural performance was measured by the growth of export crops. A vocabulary emerged

Much of the material in this essay is taken from a longer piece in a volume edited by David Potts, *Tanzanian Development in an international perspective*, scheduled to be published by James Currey in 2018. Details of the studies cited are not included here for reasons of space but are in the longer version.

where agricultural output was seen as being divided between “food crops” and “cash crops”.

Until the 1970s, the perception of the critical economic role of export agriculture was plausible, as crop exports were the predominant source of foreign exchange and of farmers’ cash income.

The emphasis on the primacy of export crops persisted after Independence, and has sometimes resulted in perverse bureaucratic interventions – for example, measures to prevent farmers from shifting from export crop production to the presumably less desirable production of food crops.

Historically, encouragement of the marketing of export crops was combined with a tendency to discourage trade in food crops in the colonial period based on the notion that local autarky was likely to reduce the risk of famine.

A corollary of the emphasis on export crops was that whereas national statistics on export crop production were quite detailed and comprehensive, data on food crop production was at best highly sketchy. Along with the lack of detail regarding non-export agricultural production, there was little systematic data on the nature and evolution of the non-agricultural rural economy.

C. Technical change and innovation

The process of innovation in Tanzanian agriculture has come mainly through the introduction of new crops and new varieties. This was the case with the colonial promotion of export crops, initially coffee, cotton and sisal, and in the 1950’s and ‘60’s cashew nuts, tobacco and smallholder tea. But although the colonial period involved an acceleration of change, there had been a process of change over the centuries, with such non-indigenous staples as bananas and maize well established before the arrival of the European colonialists. In the period from roughly 1970 on, change has largely been through the introduction of new food crops, the rapid rise in the production of what had been minor food crops and the introduction of new varieties and seeds for existing food crops. The spread of rice production, the rapid growth in citrus production and the commercial exploitation of other fruits, the

introduction of new vegetables and of new varieties (e.g. of tomatoes) have all been part of a continuing process of agricultural change.

Frequently in discussion in Tanzania, slow agricultural progress is attributed to the lack of mechanization (how often has one heard that the backwardness of Tanzanian agriculture is demonstrated by the continuing dependence on the hand hoe), although the essence of the Green Revolution in Asia was the introduction of improved varieties. In Asia mechanization was not a cause, but more a result of the success of the Green Revolution. In most areas of Tanzania, labour is still abundant so that labour saving innovation is not of the essence of progress.

D. Performance of export crops

The diversity of export crops depended on local conditions and the stimulus of international markets. In the end of colonial period export crops were dominated by sisal (in the drier areas on the Coast and central areas), coffee and cotton. In the 1960’s diversity increased, with the rapid expansion of tea, cashew nuts and tobacco. In the 1960’s a number of export crops achieved rates of growth on a par with more recent achievements in South East Asia, now held up as a model. Peasant farmers were quite eager to take up new crops which could increase the value of household incomes. This is illustrated in the following table:

Growth of main export crops: growth rates 1960/62-1967

Commodity	Marketed quantities	Value
Sisal	+0.9	-4.7
Lint cotton	+12.6	+11.9
Clean coffee	+12.1	+14.5
Cashew nuts	+11.7	+17.4
Sugar	+14.0	+13.7
Tea	+9.3	+7.0
Tobacco	+23.2	+17.9
Pyrethrum	+25.4	+27.6

Annual percentage compound growth rates

Source: Background to the Budget 1968-69

The initial decline in export growth in the 1970's had a number of causes. Government interventions in the marketing system were an important negative influence. The Ujamaa program probably had a negative impact, particularly on cashew nuts. Also, at Independence about half of cash crop exports were controlled by non-African farmers, particularly the then largest export, sisal. The nationalization of the sisal industry in 1967, following on from the collapse of the World market in 1965, led to the decline of what had been Tanzania's largest export crop. When a number of coffee and mixed farms were taken over in the early 1970's, the non-African owned sector seemed to have had its day. If one separates out the performance of African export agriculture over the long term the performance is somewhat better than is suggested by the overall data.

By the end of the 1970's, the deep macroeconomic crisis had a further negative impact. Poor incentives for export crops acted as a spur for farmers to look elsewhere for cash income – and that opportunity came from rapidly expanding demand for food products.

Since the improvement in the macroeconomic environment and the reform of the foreign exchange regime, from the late 1980's on there has been a recovery in export agriculture, but the vigorous growth performance of the 1960's has not been repeated. With smallholder cash incomes now being derived from domestic food crop sales more than from export crops, this is hardly surprising.

E: Food crops and the growth of the urban market

With the limited degree of urbanization at Independence, agricultural cash income necessarily came largely from export crops, as there was only a small domestic market. The identification of "export crops" with "cash crops", and food production as largely subsistence was roughly correct (although even at Independence, there was a larger local trade in food than available data suggested) However, with rapid urbanization farmers faced the choice in seeking cash by producing food for the domestic market, or producing export crops.

Over the past fifty years Tanzanian agriculture has been remarkably successful in providing food not

only to the expanding rural population but also to the rapidly growing urban areas. This is not to say that there have not been problems of food security and nutrition, but these have resulted more from issues of household entitlement and incomes, and from localized climatic conditions, than from overall food supply scarcity.

The population of Tanzania has more than tripled from 12.3 million in 1967 to 44.9 million in 2012, with in an annual growth rate of 2.7 percent. In the 2012 Census, Dar es Salaam was found to have a population of 4.36 million, 10 percent of the total. If account is taken of peri-urban settlements, the total would be significantly larger.

It seems likely that recent growth rates in both the national and urban populations will continue over the medium term. There is little sign yet of demographic transition.

The urban population in Tanzania was recorded as 12,359,930 as of 2011, growing from 528,508 in 1960. Extrapolating 1990-2010 growth over the following 20 years, the total population would rise to around 78 million by 2030, of whom urban dwellers would be 29 million. Of course, it is likely that a demographic transition will set in and birth rates will begin to decline, but this extrapolation suggests probable orders of magnitude. Urban population grew from 5.25% of total population in 1960 to 26.74% in 2011. Under this extrapolation, this could rise to 37% by 2030.

Urban population

Year	Population
1960	528,508
1970	1,068,227
1980	2,719,717
1990	4,811,451
2000	7,593,574
2010	11,783,830
2011	12,359,930

Source: World Bank Staff estimates based on United Nations, World Urbanization Prospects.

The Household Budget data indicate the growing importance of food crop trade as a crucial link between the rural and urban economies. Already, by 1991/92, the sale of food crops far outweighed the sale of so-called cash crops as a source of rural household cash income, and by 2007 food crop sales were more than three times as important as “cash” crop sales. That being so, the persistence of the use of the food crop/cash crop classification in descriptions of Tanzanian agriculture, in official and other sources, is rather peculiar.

The 2007/8 sample census of agriculture estimated that for 61.6% rural households the main source of cash income was sale of food crops. Less than 10% of households reported so-called “cash” crops as the main source of cash income.

Table: Distribution of main sources of household cash income

	Dar es Salaam			Mainland Tanzania		
	91/92	00/01	7	91/92	00/01	7
Sales of food crops	1.7	2.8	4.3	20.7	13.8	17.6
Sales of cash crops	1.2	0.6	2.3	8.3	7.4	6.3
Sales of charcoal	N/A	N/A	2.0	N/A	N/A	1.6
Sales of timber / poles	N/A	N/A	0.5	N/A	N/A	0.6
Sales of firewood	N/A	N/A	0.5	N/A	N/A	0.6
Sales of other non-timber products	N/A	N/A	1.2	N/A	N/A	1.4
Business income	26.8	31.1	27.7	26.8	30.3	23.9
Wages or salaries in cash	62.7	40.7	52.7	31.1	23.9	32.7
Other casual cash earning	2.9	15.2	3.6	4.9	12.0	3.9
Cash remittances	1.0	4.8	3.0	2.1	5.4	4.8
Fishing	0.7	0.6	0.4	2.0	0.8	1.8
Selling of local brew	N/A	N/A	0.7	N/A	N/A	3.0
Other	3.0	3.9	0.1	3.7	5.3	0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Household Budget Surveys

In 2007, more than half of Dar es Salaam household incomes (50.8%) went on cash purchases for food – this had declined, it is true, from 53.1% in 2000 (the usual expectation is that as incomes rise the proportion spent on food will decline).

F: Crop Production

The diversity of agricultural conditions has resulted in a diversity in traditional food staples. In some areas (Kagera, Kilimanjaro and Mbeya) various varieties of bananas provided the main source for food and alcohol. In other areas, maize had become the basic staple, displacing such grains as sorghum and millet. Over recent decades, rice has begun to compete as a food staple. Irish and sweet potatoes still play only a supplementary role, but with

urbanization, potatoes are becoming a more significant food staple.

Food staples include maize, sorghum, millet, rice, wheat, pulses (mainly beans), cassava, potatoes, and various types of bananas. In terms of cash sales, maize and rice are the most important, although some other marketed staples are under-reported (e.g. some descriptions of Tanzanian agriculture suggest that bananas are mainly subsistence crops; a cursory observation of Dar es Salaam markets indicates that this is quite false – the banana trade is evidently sizeable even if under-reported).

The crop most sold by farmers is maize, although many small farmers continue to grow maize mainly as a subsistence crop. A larger proportion of farmers who cultivate paddy sell their output.

On the mainland, of the estimated 14.517 million hectares of potentially “usable” land, over 70% was utilized, with the average household cultivating 2 hectares. Annual crops were the dominant use, accounting for 73% of land used (8.756 million hectares).

From the 2007/8 Agricultural Census, the main planted annual crops were:

	Thousand hectares
Maize	4,087
Paddy	907
Beans	750
Cotton	575
Sorghum	569

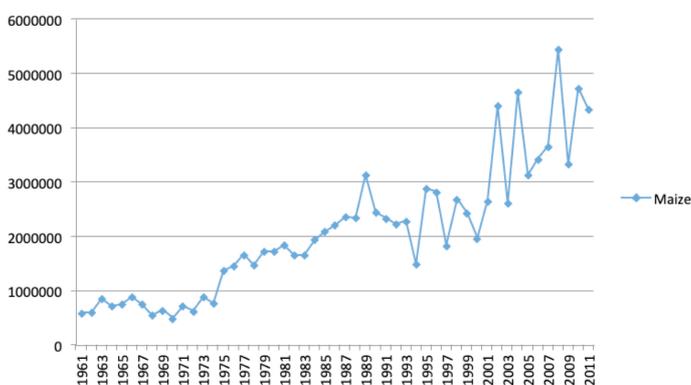
The picture of land pressure was quite varied, with 66% of households using all available land. 37% of households responded that they had sufficient land, while 63% responded that they did not.

Since Independence the worst crisis in food supply came in the early 1970s (1973 – 1976), a period which witnessed a decline in farm production, including that of food crops, mainly due to drought in 1973-1974 and massive displacement of rural people re-located to Ujamaa villages in some areas, (Isinika et al, 2003).

After 1975, subsidized input supply and pan-territorial pricing had positive impacts, while poor marketing arrangements and weak price incentives for export crops led to a switch from export to food crops. This involved both an increase in acreage under food crops and intensification of production. A study by Meertens et al (1996) in Usukumaland provided evidence of crop intensification up to 1991. Other documented examples of intensive food production include application of high fertilizer rates for maize production in the Southern highlands under the Maize project during the 1970's (FAO, 1986; WB, 1994). The adoption of high yielding hybrid maize and improved varieties of Irish potatoes also in the Southern highlands (Isinika 1998), intensive rice cultivation in Shinyanga region (Meertens et al, 1996; WB, 2000), were among other examples of more intensive crop production.

Maize is currently the most important staple in Tanzania. It has been estimated that maize provides as much as three fifths of dietary calories and more than half of utilizable protein to the Tanzanian population, so that maize supply is essential for national food security, and periods of food shortages are typically associated with shortage of maize. Annual volatility of production responds to weather conditions. Over the longer term, the trend in maize production has kept up with population growth, although there have been periods (e.g. the early 1970's and the 1990's) when production growth failed to match population growth.

Maize production in metric tons 1961-2011



Source: FAOSTAT DATA BASE

Paddy: Over the longer term, one of the quiet success stories of Tanzanian agriculture has been the expansion of paddy production. Increases have

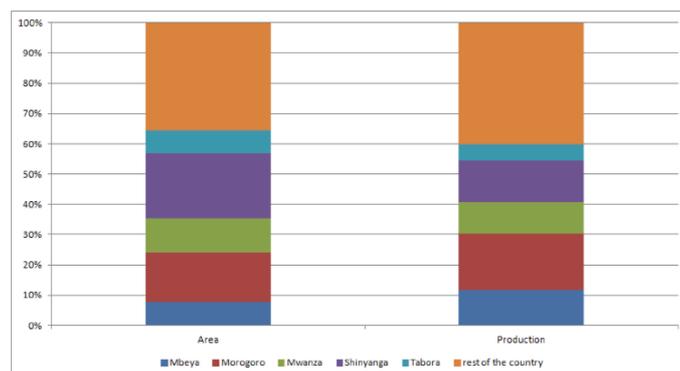
mainly resulted from an expansion in total land planted rather than increases in yield. In the Lake cotton growing areas, rice competes as a source of cash income with cotton, with rice supply is affected by the cotton price and vice versa.

Production has increased in response to the fast growing domestic market rice has high income elasticity and is a convenient cereal for use by the urban household. Rice is mainly produced for the domestic market, although there has been some exporting in recent years. For those farmers able to grow paddy, it is a profitable crop, even if by international standards yields per hectare are low.

According to the Agricultural census of 2007/8, more than 19% of agricultural households grew rice (an increase of a fifth since the 2002/2003 census). Rice production covered approximately 907 000 ha, representing 18 percent of cultivated land. Virtually all rice (99 percent) is grown by smallholder farmers using palatable traditional seed varieties. Rice productivity is lower than in most neighbouring countries and is one of the lowest in the world. Rice is grown within three main ecosystems (Sagcot, 2010) rain fed lowlands (68 percent): average productivity 3.5 mt/ha; rain fed uplands (20 percent): average productivity 1.2 mt/ha; and irrigated rice cultivation (12 percent): average productivity 3.8 mt/ha.

Most irrigated plots are part of small, village-level schemes; however, some are part of large-scale schemes that were formerly state-managed farms (Minot, 2010).

Figure 2: Rice production and producing regions



Source: Ministry of Agriculture

Other grains: Sorghum and millet have continued to play a significant role as a food source and an input for local brewing. However, production has not grown as much as maize and paddy, as the cash market has not expanded in the same way. The decline in relative importance of these traditional grains is unfortunate, in that these grains are more drought resistant than maize.

The central regions of the country stretching from Dodoma to Mwanza account for three-quarters of Tanzania's 500,000 to 800,000t. annual sorghum harvest. Smaller quantities are harvested in the Mtwara region. Almost all of Tanzania's pearl millet is grown in the dry central regions. While both crops are drought-tolerant, pearl millet can better withstand periods of heat stress than sorghum. Pearl millet production is concentrated in the drought-prone areas of Dodoma, Singida, and Shinyanga. The annual harvest is estimated at around 230,000t..

Sorghum and pearl millet are grown almost entirely by small-scale farmers on small plots. Most of these farmers also plant maize. If early-season rains are favourable, a larger area may be planted to maize. If early-season rains are poor, relatively more land may be planted to sorghum or pearl millet.

Despite limited improved crop management, Tanzania's average sorghum and pearl millet yields are among the highest in southern Africa, reflecting the relatively long growing season and favourable soils found in the sorghum and pearl millet production zones. Nonetheless, grain yields could be improved through the adoption of improved inputs. The extension efforts of the NGO Sasakawa Global 2000 suggested that small-scale farmers can readily achieve sorghum yields above 2 t ha through the use of better seed and small quantities of chemical fertilizer (Quinones et al. 1991), but adoption rates for these inputs sharply declined once Global 2000 stopped providing them to farmers. Rural markets generally do not stock improved seed and fertilizer.

The limited commercial market for these crops encourages farmers to maintain a low level of technology and production. Yet the development of

a commercial market is discouraged by the lack of a consistent marketable surplus.

The urban population of Tanzania has become increasingly committed to the consumption of bread made from white flour, which is highly import dependant. White bread is not very nutritious. Discussion with a successful Dar es Salaam bakery indicates that efforts to introduce whole wheat or multi-grain bread are not met with a positive consumer responses.

Wheat production typically accounts for less than one fifth of total domestic consumption. Wheat is the fourth most important staple in the diet of Tanzanians. Wheat accounts for close to 30 percent of total agricultural imports with an average import bill of over \$150 million per year.

Over 90 percent of wheat produced in URT comes from Arusha, Iringa, Mbeya, Kilimanjaro and Manyara regions. While wheat production in the southern highlands is predominantly small scale, production in the northern highlands is mainly on large scale farms.

The effort to boost wheat production through the Canadian mechanized wheat project proved to be economically unviable. Maybe if the same resources had been committed to expanding small and medium scale production the results would have been more positive.

Traditional brewing: A neglected area of study is the production of traditional brews. An important part of the household income, diet (and indeed pleasure) of rural Tanzanians comes from the production and consumption of locally produced alcoholic beverages. Indeed it can be argued that the extraordinary diversity of local brews is a rich part of Tanzania's cultural traditions, And yet little is done to support and promote such activity, with the likelihood that it will be steadily displaced by large-scale commercial brewing.

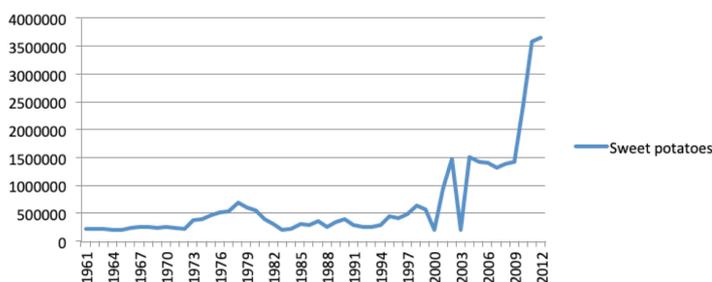
More should be done to record the diversity of local brewing, to improve hygiene and to promote the use of local brews, using locally grown ingredients and providing household incomes to small-scale producers.

Other food crops: A study published recently, Agricultural dynamic and Food Security Trends in Tanzania by Andre Leliverldf, Tim Dietz , Wijnand Klaver, Blandina Kilama and Dick Foeken (Development Regimes in Africa (DRA) Project Research Report 2013-ASC-3) reinforced the view presented in this paper that in recent years there has been considerable growth in food crop production, particularly of minor crops. The study identified sweet potatoes, groundnuts, bananas, sesame, cowpeas, pigeon peas, sunflower and pulses as being particularly successful food crops over the decade 2000-2010.

Sweet potatoes are grown throughout Tanzania (Lake Zone, Western Zone, Southern Highlands Zone, Eastern Zone and Northern Zone), It is a hardy crop with broad adaptability to climate and soils, hence it offers a sustainable food supply when other crops fail. The relative importance of sweet potatoes has increased because of problems faced by other crops (cassava mosaic and brown streak, and banana bacterial wilt, sigatoka, nematodes and weevils). However yields are low due to lack of high quality planting material of improved varieties and disease problems.

According to a McKnight Foundation report (2005), the major limiting factor for increased sweet potato production is the shortage of clean planting materials of superior varieties.

Sweet potatoes production in tonnes (1961-2011)



Source: FAOSTAT

Bananas are a leading staple, in areas where they are grown, used in varying forms cooking bananas (matoke and ndizi), as fruits and for beer brewing (e.g. lubize in Kagera and mbege in Kilimanjaro). They are also a source of actual and potential cash

income, delivering to urban markets and in cross border trade (notably to Uganda).

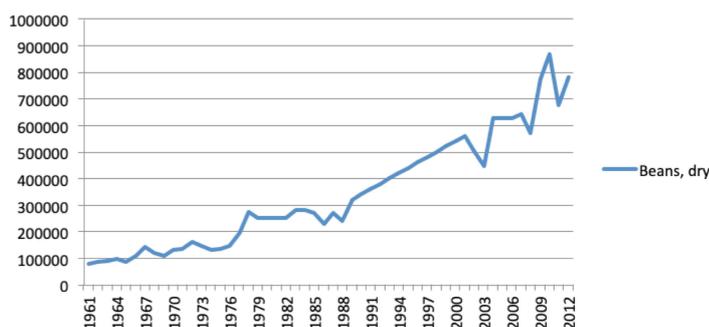
The trade in bananas is large but mainly unreported. Casual observation suggest that cooking bananas marketed in Dar es Salaam on a considerable scale.

Given the actual and potential importance of banana cultivation, it has not received sufficient attention from the agricultural services. This becoming an issue of some importance, as the crop is increasingly susceptible to disease and pests (e.g. the spread of nematodes).

Cassava: The low value to bulk ratio limits the long distance marketing of cassava root. Cassava is particularly produced for home consumption or marketed locally, although it enjoys a lively market in Dar es Salaam during Ramadan. Historically it was seen very much as a famine crop, the colonial authorities promoting it in that role.

Pulses are grown throughout Tanzania, often intercropped with maize. Production has followed an upward trend with considerable fluctuations. Pulses have a high degree of commercialization..

Dry beans production in metric tons (1960-2012)



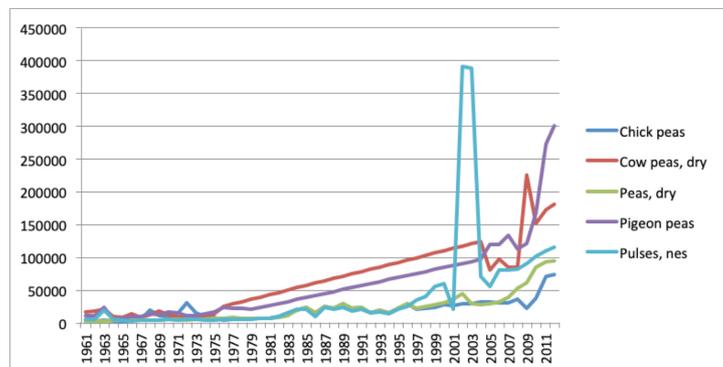
Source: FAOSTAT

The lively expansion in production of beans and pulses in recent years is a highly welcome trend, given their positive dietary contribution.

Vegetables, fruits, citrus, irish potatoes: Personal observation of Dar es Salaam markets over five decades indicates the growth in the quantity and variety of fruit and vegetables supplied to the rapidly growing market. This aspect of agricultural growth is only incompletely recorded in available data. For example, fruits produced as permanent tree crops

are not included in the agricultural census data (the only fruit included is water melon).

Rest of pulses production in metric tons (1960-2012)



Source: FAOSTAT

It is surprising to remember, when in the two citrus seasons Dar is swamped with oranges, that in the late 1960's they were virtually absent from the Dar market (I remember one Israeli advisor suggesting in 1968 that they be imported from Israel)..

Tomatoes are recorded as the largest commercial vegetable crop (as an annual crop they are covered by the Census) . Tomatoes contributed the highest percent of harvested quantity (321,128 tons) to the recorded harvested quantity of fruits and vegetables. (URT 2012). Most vegetables are planted in the long rains, except water melons which are grown more in the short rainy season.

Marketed vegetables include tomatoes, onions, leeks, shallots, chives, sweet peppers, cabbages, Chinese cabbages, lettuce, cauliflower, peas, carrots, cucumber, water melon, string-less beans, peas, mushrooms. eggplants, African eggplants, okra, collards/mustards, green leafy vegetables such as amaranths, nightshades, pumpkin leaves, sweet potato leaves, cassava leaves, and some wild varieties such as wild mushrooms, milk weed etc.. Pineapples, passion fruits, citrus fruits, mangoes, peaches, pears and desert bananas are important marketed fruits.

Production of most horticultural crops is by small scale farmers. Some high value exportable crops such as cut flowers and some vegetables such as green beans, peas, courgettes, baby corns, chilies,

baby carrots, baby leeks etc. are produced by large scale farmers.

For the future, small-scale production is likely to be critical for the supply of domestic markets, and the spread of new crops, improved seeds and new varieties is therefore of great importance.

Livestock products are another area where Tanzania is largely self-sufficient. The urban market for livestock products has grown rapidly, and with rising urban incomes can be expected to growth faster than urban populations, as the demand for meat tends to be income elastic.

From the 2007/08 Agricultural Census, there were about 2.3 million households which kept livestock. In the surveyed households, there 21.281 million cattle,, 15.154 million goats, 5.716 million sheep and 1.584 million pigs. Most livestock (99%) were kept by smallholders. The heaviest concentration of livestock production was in the Northern regions mainly Shinyanga and Arusha with a total of 4.2 million and 2.5 million livestock units respectively, followed by Tabora, Mwanza, Manyara, Mara and Singida with about 2.0 million units each. In the Mainland, there were about 42.6 million chicken of which 96% were local birds, the number of households engaged in more sophisticated production were still relatively minor. Other livestock included stingless bees, which accounted for 76 percent of the farmed bee population and honey was produced by 129 thousand households representing two percent of the household involved in crop production.

The availability of livestock services and infrastructure varies between the type of services and the region. Services are more accessible in urban and peri-urban areas. Regions such as Shinyanga, Mwanza which had large population of livestock, had less access to livestock services than regions such as Dar es Salaam with relatively fewer livestock. Access to livestock services is more readily in regions like Kilimanjaro and Mbeya where farming is more intensive and infrastructure more developed.

In general, small-holders have done remarkably well in expanding production to supply growing urban demand, despite not particularly effective support services. For the future, to continue to supply the

growing market there will be a need for improved livestock husbandry and disease control, requiring improved support services.

Cross Border Trade: Public policy has tended to discourage or even prevent cross-border trade, one result of which there is little reliable data on its extent and composition. As the domestic food trade has developed, not surprisingly some of this trade has spilled over as exports to neighbouring countries.

Recurring efforts to curb cross-border trade in food crops seemed to imply that it was less desirable to sell beans to the Kenyans, than to export coffee to European markets. However, anecdotal evidence suggests significant exports of beans to Kenya, matoke to Uganda (where it is even claimed it reappears in London markets as Ugandan matoke), rice and citrus— in season Tanzania is apparently the main supplier of oranges to the Nairobi market.

Such trade is likely to grow, not least because some of the border regions of Tanzania are nearer to external markets than the main urban markets of Tanzania. Such trade should be encouraged as part of the development of an efficient regional food supply system, as a source of rural household incomes and as just as much a source of foreign exchange as, for example, coffee exports to Europe. Moreover, national food security is likely to be enhanced by the growth of food exports, providing a possible buffer in the domestic market in difficult years.

G: Improvements in the quality of rural life

Given the low levels of rural income and the large and increasing gap between rural and urban incomes, it is easy to conclude that the quality of rural life must have stagnated. This conclusion might easily be arrived at by the new arrival in Tanzania, observing the conditions of rural life for the first time. However, there has been significant if slow improvement. This is evident in the data for improved roofing and other aspects of housing construction, improvements in sanitation, the better provision of social services (e.g. the great increase in literacy), improvements in clothing (e.g. wearing of shoes) and increasing access to the radio.

One area of speculation concerns the possible impact of current innovations on rural life. The extraordinary expansion in the use of mobile phones has demonstrated how a modern technical innovation can transform an aspect of rural living over a short period. The use of mobile phones for the transfer of funds is transforming financial connections between urban areas and the countryside. The introduction and rapid spread of the bodaboda (motor cycle for hire) has greatly increased the accessibility of villages not served with improved roads, both for human carriage and for the transport of goods. Solar energy, although still not very widespread, may hold out a prospect for the extension of electricity in those areas too remote or too sparsely populated to be serviced by the grid in the foreseeable future.

The contrast between fast growth in urban incomes and much slower growth in rural incomes is an almost universal characteristic of development. Agricultural growth and the expansion of rural incomes is more or less limited by biological constraints. And the income of rural labour limited by its excess supply. At this stage of Tanzania's development the best that can be aspired to is steady growth in per capita rural incomes of 1-2% per annum, and in periods of rapid urban growth this is likely to result in an increasing gap between urban and rural incomes. Nevertheless, over a generation this will result in a substantial improvement in rural welfare, and starting from a low base modest improvements can result in a significant change in the quality of rural life.

The emphasis offered in this section on the positive changes in the quality of life in rural areas is not meant to imply that the conditions of rural living are satisfactory. Poverty is still widespread and indices such as infant mortality, malnutrition and endemic diseases indicate that life is often precarious and living very difficult. However, it is important to note the positive developments which provide indications of the potential for further improvement, particularly through the link with urban development provided by the trade in food. This has resulted in increases in rural household cash incomes, which in turn has spurred growth in rural services. For the future, if this pattern of growth persists there seems a

reasonable prospect for a steady improvement in rural welfare.

The increase in the cash income of from agricultural production will be somewhat greater than might be suggested by the growth in agricultural output, which is measured in physical terms. As household members move to the city, those remaining monetize what had previously been household subsistence.

Over the longer term, as the rural urban population shift continues, it can be expected that the supply of rural labour will tighten and rural wage rates will rise.

However, such a virtuous path is not inevitable. A significant part of past growth has come about by bringing more land into production rather than through increases in productivity. Such growth at the extensive margin makes reasonable economic sense while new land is available, but this will become less possible with time – the margin new land being brought into production is likely to be of declining potential fertility. The growth process will only be sustainable by increasing land productivity, either by increasing yields of existing crops or by shifting to higher value crops.

H: Efforts to achieve rural “transformation”

One recurring aspect of official attitudes in agriculture in Tanzania has been frustration with the slow progress perceived to be characteristic of smallholder farming, even to the point of viewing it as essentially stagnant and of low potential. The reaction to such frustration has been to seek out ways to transform agriculture at a leap.

This was true of the colonial Groundnuts scheme, of the commitment to the so-called “Transformation Approach” (endorsed by the first World Bank country report and an important feature of the First Five Year Plan), the Ujamaa initiative, the Canadian wheat program, and SAGCOT.

In the late colonial period the Groundnuts Scheme was a huge and extraordinary flop – this is no longer studied or even much known about. Which is a pity as its forgotten history contains signal lessons of how not to do agricultural development.

The scheme was proposed as a solution to the problem of supplying food oils for the British population, in light of the extreme scarcity of foreign exchange. Officials of the United Africa Company, a subsidiary of Unilever, suggested to the UK government that the problem could be resolved by the cultivation groundnuts in the British colonies. The government authorized £25 million to cultivate 150,000 acres over six years; by the abandonment of the project in 1951, £49 million had been spent. At current prices, the cost of the project was much more than £1 billion. Most of the scheme’s operations were located in southern Tanganyika.

After great difficulties, the first nuts were planted, but when the rainy season arrived, flash floods swept away the workshops and stores, and during the subsequent dry season the clay soils baked into a hard surface impeding harvesting. The original target of 150,000 acres was gradually reduced to 50,000 acres and after two years, only 2,000 tons of groundnuts were harvested. Later efforts to grow sunflowers failed because of a heavy drought.

The project was cancelled in January 1951.

There were many reasons for failure. The belief that mechanized agriculture would be straightforward proved incorrect; the inexperience of the drivers and the harshness of the conditions resulting in the wrecking of many of the tractors. By the end of the summer of 1947, 2/3 of the imported tractors were out of use.

There was an implicit arrogance regarding African farmers. One simple question which was not addressed was why the land chosen was uncultivated – evidently African farmers knew something the scheme planners didn’t. Such arrogance also led to the failure to consider the alternative of promoting small-holder production of groundnuts and oil-seeds. In the 1950’s and 1960’s Tanganyika smallholders demonstrated extraordinary responses to market opportunities – if the huge sums used had been spent were used to encourage small-farmers, using simple labour intensive technologies that were known to work, it is reasonable to speculate how much more would have been achieved.

Towards the end of the colonial period, the idea of providing a short-cut to more rapid development resulted in the so-called “Transformation Approach” that was to be contrasted with the slow moving “Improvement Approach” to accelerating agricultural growth. This was designed by the colonial authorities, endorsed by the World Bank in the first report on The Economic Development of Tanganyika, and was incorporated into the First Five Year Plan, with the commitment to develop seventy settlement schemes and the creation of a special ministry dedicated to this approach. That approach was mostly unsuccessful and was drastically scaled down in 1965/66.

The belief in the need to “transform” smallholder agriculture was one of a number of strands in the thinking that led to the Ujamaa village programme. The large-scale Canadian wheat project was another instance of an effort to by-pass smallholder agriculture through a large scale mechanization programme, which turned out to be economically non-viable.

The thinking guiding the current Southern corridor programme and some recent donor (G7) initiatives also seems to be influenced by the idea that there is a large-scale alternative to ensuring future food supply. There is one critical point to be made here.

Suppose that large-scale mechanized food production were successful, it would not make much contribution to food security. The problem of food security in Tanzania is not a matter of overall food supply but of household entitlements and therefore of household incomes. The families facing food insecurity are those with low incomes. If national food supply were enhanced by large-scale production displacing the small-scale producer, this would cut off one plausible avenue to rural poverty reduction and would reduce rural food security.

This is not to say that large-scale production cannot play a positive role in stimulating smallholder production. There has been symbiotic development through outgrowing, for example in tobacco, pyrethrum, tea and sugar. Where larger scale operators can run efficient processing facilities and

provide a market for smallholder output, models can develop to be mutual benefit of both.

i. The future of agriculture

Underlying agricultural capacity: Tanzania has always seemed to be a relatively sparsely populated country, even today after generations of rapid population growth. It is therefore not difficult to believe that there must be a store of unexploited arable land, leading to some claims that as little as 11 per cent of potential arable land is currently farmed. Such statements can easily lead to visions of rapidly expanding agriculture acreages, possibly through large scale mechanized development.

However, in reality there is wide variability of agricultural potential and the hospitality of the environment, as is evidenced by the diversity of rural population density in Tanzania. The economic potential of arable land depends not only on fertility but on many other factors. Availability of water is a critical constraint in many areas (e.g. in those central areas of Tanzania which achieve substantial food surpluses in years of good rainfall, but that may only be one year in three or four). Access is important; the potential of south west Tanzania was only slowly exploited because of its remoteness from national markets. Remoteness is not only a matter of access to major transport systems, but also local access through all-weather feeder roads. In the short-term, exploitation of land is also limited by inhospitable living conditions (e.g. malarial mosquitos, or trypanosomiasis bearing tsetse).

Over the medium term, readily cultivable land will become scarcer, so that the improvement of land productivity will become more important (e.g. through improved irrigation, use of purchased inputs, improved seeds and more valuable crops). How far will government be able to enhance this process?

The government apparatus: In the British colonial period, Tanganyika had been ruled by a modest bureaucratic apparatus. Steps to begin to develop a local cadre to take over came very late, and in the years following Independence, the weak bureaucracy was buffeted as a result of self-induced instability. During the implementation of the Arusha

Declaration, top civil servants were called on to staff the greatly expanded State sector. Continuing changes in the government structure, with “decentralization”, followed by the abolition of district government, the shift of agricultural marketing to the cooperatives, only to be followed by their abolition and then revival, and the challenges of implementing Ujamaa all took their toll.

A system which was already weak was hit by the negative economic conditions from 1973 onwards, leading to an erosion of incentives. By the early 1980’s, the civil servant’s joke that “the government pretends to pay us, and we pretend to work” had a ring of truth. When “structural adjustment” was implemented from 1985 onwards, too little attention was given to the steps need to enhance government capability.

The general debility of government was reflected in the erosion of field capacity in the agricultural sector. Budget limitation prevented field staff contacting their potential clients and left gaps in the staff. Moreover, frequent reorganisations of both the extension and research services eroded already weakened capabilities.

Suggestions that government or donor should do this or that useful thing must be tempered by a realistic assessment of the potential of the organizational apparatus. The weaknesses of the government itself are possibly most obvious, but in relation to rural development donors have hardly done better. Dependant on short-term “expert” missions for project design, unwilling to make the stable long-term commitment necessary to develop agricultural research, slow to recognise and respond to failures, with little institutional memory and too susceptible to the fashions embodied in novel vocabulary that beset the donor community, their poor performance is hardly surprising.

Grassroots contact between the government agricultural service and smallholders is intended to be through the extension service, and in the last few years government has been making efforts to boost effectiveness by recruiting more extension workers.

However, the extension service in Tanzania does not have a good record of productivity.

A fundamental issue with the agricultural service is a deep-seated tradition that its primary function is, at worst, to direct the farmer and in general pass down information from the top. This approach should be transformed, with the first task of the service being seen as monitoring the needs of the farming community and passing up information regarding farmers’ needs and the constraints they face.

A second issue relates to accessibility. There is no point in employing extension staff if the means are not available for them to visit their clients, and in the past budgetary constraints have limited staff movement. With the improvement of local transport infrastructure it should be possible for extension staff to move through the countryside on motor bikes. It will only make sense to expand staffing in pace with the availability of funds to provide transport support, for example by the widespread provision of motor bikes and fuel.

The third issue relates to effective extension “messages”. Offering conventional advice on field practice (e.g. spacing; early planting) is rarely productive – farmers have heard it before and if such advice is ignored it is because it is often irrelevant. Extension is likely to be productive if it responds to the real needs of farmers and provides knowledge of new seeds and crops and highly specific help with handling crop pests etc. For such productive advice to be available, extension has to be the final link in a two-way chain, backed up by effective research and input supply.

In recent years government has made efforts to rebuild the extension service, but needs to go much further in thinking through how it can aid the development of smallholder farming, rather than again chasing illusions of “transforming” agriculture and making big breakthroughs through large scale mechanized agriculture.

Agricultural investment: In exploring possible options for future government intervention, the possible role of public investment needs to be clarified. The most important on-farm investments are made by farm households, and are very incompletely recorded in

official data. The key public investment role is to provide the conditions which encourage on-farm investment, most notably those which make it profitable to produce more output. In this regard, it is important to note that some of the most important government investments for agriculture do not fall under the budgets of the agricultural ministries – particularly investments in all-weather roads, to provide ready market access. To assess public expenditure commitment to agriculture by the size of the budgets of the agricultural ministries is simple naïve.

Marketing: The history of agricultural marketing in Tanzania has demonstrated that the institutional structure is at least as important as price policy in determining incentives. Large scale, monopolistic state trading did not work well for the farmer in Tanzania. Monopolistic state marketing had a poor record in handling payments and managing crop storage and sales. Arguably, the move to single channel agricultural marketing was the worst economic mistake made by the government of President Nyerere. Repetitive and misguided government interventions to control, restrict and even eliminate the “middle man” reflected a failure to understand the traders’ positive contribution.

Given the evident importance of agricultural trading as the link between farmer and market it is surprising that traders do not receive more positive recognition. However, it is much easier to cast the trader as villain than hero. This is not unique to Tanzania – the trader labelled as a parasite is an easy target for populist politics. If the trader is seen as exploitative and parasitic, it is not surprising if policy-makers seek a short cut to improving the lot of the farmer by eliminating the private trader. In the initial post-colonial period, suspicion of traders also had an ethnic motivation most private traders were ethnically of Asian origin.

Restraints on rural trade had roots in the colonial period. Colonial ordinances restricting intra-district food trade were enacted before the Second World War, as local self-sufficiency was seen as countering the risk of famine. Export marketing boards were initiated by the colonial authorities in the 1940’s. The justification offered was the need to stabilize prices.

However, the export marketing boards by accumulating sterling balances during periods of commodity boom, were also a useful mechanism for UK Balance of Payments management, given British balance of payments problems at that time.

During the colonial period, cooperative trading had developed, but was mainly effective for standardized products with long shelf-lives – particularly for cotton and coffee. Initially, in the case of the KNCU in the 1920’s, the colonial authorities had opposed the development but after the Second World War, British colonial policy had supported cooperative development. The cooperatives had not only been successful in processing and trading, but also took on development tasks, such as supporting access to higher education.

The government, after Independence, supported the extension of the cooperative model throughout the country, enforcing the displacement of local traders by the cooperatives, resulting in the virtual disappearance of the local Asian duka-wallahs who had been the mainstay of the local trading system. The previous mix of small traders, co-operatives and private wholesalers was replaced by single channel marketing system, through a chain running from the primary co-operative, through the co-operative union to a marketing board (later a crop authority), with monopoly at each stage.

The effort to extend the co-operatives beyond the thriving voluntary institutions created a quite inefficient system. Already, by 1967, weaknesses in the cooperatives had occasioned a Presidential commission of enquiry. There was an oscillation between the promotion of marketing co-operatives and constraining them, to the point of abolition (1973-82), with the amalgamation of local marketing functions, the previous activities of the Marketing Boards, and some of the extension responsibilities of the Ministry of Agriculture under Crop Authorities.

Marketing inefficiency became a prime cause of the deterioration in agricultural incentives. The management at the various levels was not subject to the discipline of competition, or to stiff sanctions from above or democratic control from below. By the end of the 1970’s the system had become quite

ineffective – most infamously in often delaying payment for produce supplied for long periods. In addition an over-valued exchange rate in effect taxed export agriculture heavily by the end of the 1970's. Even when exchange rates were adjusted, initially the benefit to farmers was limited, given marketing inefficiency.

When faced with the need to reform, Mwalimu had little faith in the potential efficacy of private trade. When it was proposed to abolish the NMC monopoly on food trade, the President honestly felt that would lead to a collapse in the food trade and to food riots. However, when trade was liberalized, the response of local traders was impressive, and very quickly a network of traders emerged that effectively supplied food to Dar es Salaam.

Given the apparent effectiveness of food trading networks, the most important future agricultural policy need is to promote such trading and to avoid interventions that disrupt or discourage traders (e.g. “rent-seeking” policy controls harassing transporters).

i. What is to be done?

Recognition of the primacy of food production: One simple, but clear conclusion of arising from the discussion above is the need to recognise the prime importance of commercial food production. The anachronistic discussion between “food” and “cash crop” production should be dropped from official vocabulary and statistical descriptions. The performance of agriculture should be increasingly judged by its success in feeding the population and priorities for research and the development of infrastructure adjusted in light of this recognition.

Future role of public interventions: Given the rather poor record of public (government and donor) interventions in agriculture it would not be difficult to come to a “free market” conclusion that a laissez-faire approach might be better than misguided government interventions and failed donor investments. However, the successful mix of government and market initiatives have facilitated “Green Revolutions” elsewhere, for example in many Asian countries.

This suggests that the key future role for public support is through effective applied research – that is providing the basis for a flow of knowledge that farmers need but cannot supply for themselves. Only with effective research support will the resources spent of extension become productive.

There can be no question that Tanzania has some good agricultural researchers and also has access to the research of CGIAR organisations, some of which have branches in Tanzania. However, activity is fragmented. Reviews of the agricultural research effort in Tanzania indicate a number of weaknesses:

i. The resources devoted to agricultural research (e.g. as a percentage of agricultural GDP) are on the low end of international practice;

ii. The sector has suffered from institutional instability – for a long period research was a parastatal activity, it was then reincorporated into the Ministry of Agriculture and has now once again been hived off under autonomous bodies;

iii. Finance has been unstable – for a long period research was over-dependant on donor finance, which was volatile and did not provide the comprehensive, predictable and long-term support needed for operation of an effective national research programme.

iv. For a decade, measures to control public expenditure resulted in a block on recruitment to the agricultural research service. In recent years as staff recruitment actively resumed, the long gap in recruitment had resulted in a scarcity of top level (Ph.D. level), who had drifted off to international jobs and University posts – efforts have been made to fill the gaps by bringing retirees back into service

Agricultural research is a lengthy process, requiring efforts over a number of years plant breeding for example, requires commitment over many years for the development of improved varieties. The gaps resulting from the chequered history of the research programmes left Tanzanian farmers without limited access to improved seeds.

From the early 1970's until 1990 the government was responsible for national seed production and

distribution, through the Tanzania Seed Company Ltd (TANSEED), established in 1973 to produce certified seed and to provide seed extension, dissemination, and advisory services. However, TANSEED was beset with problems of insufficient transport and funding, lack of humidity-controlled warehouses, and inadequate seed drying equipment, resulting in seeds with low germination rates, but at prices much greater than unimproved seed.

Government liberalized the seed industry in 1990. After liberalization, a number of foreign and domestic private seed companies entered the seed sector to produce, distribute, and market improved seed, which concentrated on hybrid and composite maize seed, leaving a gap in the availability of improved seeds for other food crops. There have, of course, been a number of initiatives by international NGO's to support innovation in agriculture, and some of these have been successful, but such piecemeal and fragmented efforts are no substitute for a comprehensive national program. This is clearly an area in which new efforts need to be made by government.

5.

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