

Background paper for the
**Competitive Commercial Agriculture in Sub-Saharan Africa
(CCAA) Study**

**All-Africa Review of
Experiences with Commercial Agriculture**

Case Study on Oilcrops

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All-Africa Review of Experiences with Commercial Agriculture

CASE STUDY ON OIL CROPS

SECOND DRAFT

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July 2007

Oil Crops

Recent decades have witnessed the relentless and continuing advance of the oil palm as the world's cheapest source of vegetable oil. With potential palm oil yields of around six tonnes per hectare per year, no annual oilseed crop comes anywhere near to its physical productivity. The major producers have been Malaysia and Indonesia, with production being undertaken by both estates and outgrowers. Palm oil has steadily increased its share of the world oils and fats market and in the process contributed to a fall in average vegetable oil prices. The progress of palm oil and also soya oil has caused problems for traditional producers of more expensive oils, e.g. groundnut oil from Africa and coconut oil from Sri Lanka and the Philippines. An important aspect of the development of the world oils and fats markets during the last 50 years has been the marginalisation of Africa, which has moved from being a major vegetable oil exporter to a substantial net importer.

In this case study we review the most significant example of export-oriented oilseeds production in Sub-Saharan Africa - the groundnut (peanut) sector in Senegal – then consider contrasting experiences with the promotion of smallholder oil crop production as an import substitution measure.

Senegal Groundnuts

We begin this section with a review of broader production and trade trends relevant to the groundnut sector, then consider the experience of the Senegal groundnut sector in light of these trends.

Production Trends (African and World)

Figure 1 shows groundnut production trends in the largest five producing countries in SSA since 1965. Collectively, these five countries have accounted for around two thirds of SSA groundnut production during this 40 year period. Nigeria is SSA's biggest groundnut producer. Its production collapsed during the 1970s (as agriculture was neglected during the first oil boom), but there has been rapid recovery and growth since 1985, when agriculture was once again promoted as part of the country's structural adjustment efforts. Senegal has been SSA's second largest groundnut producer over the period as a whole, although its production has recently been overtaken by that of Sudan. Senegal's production peaked in 1975 and has been on a gradual decline since¹.

During 1965-74 SSA accounted for approximately 30% of world groundnut production. This share had fallen to 22-23% in 1995-2004, although this, in fact, represents a slight recovery from the share achieved in 1985-94. Within these figures, Senegal's share of world groundnut production stood at around 5% during 1965-79, but suffered a continual decline during the period, reaching 2% by 1995-2004.

¹ Regressing production against time over the whole period 1965-2004 gives the following relationship: $Y = 930486 - 7550t + \varepsilon$. The time trend variable is significant at 5%; $R^2 = 0.135$.

Figure 1

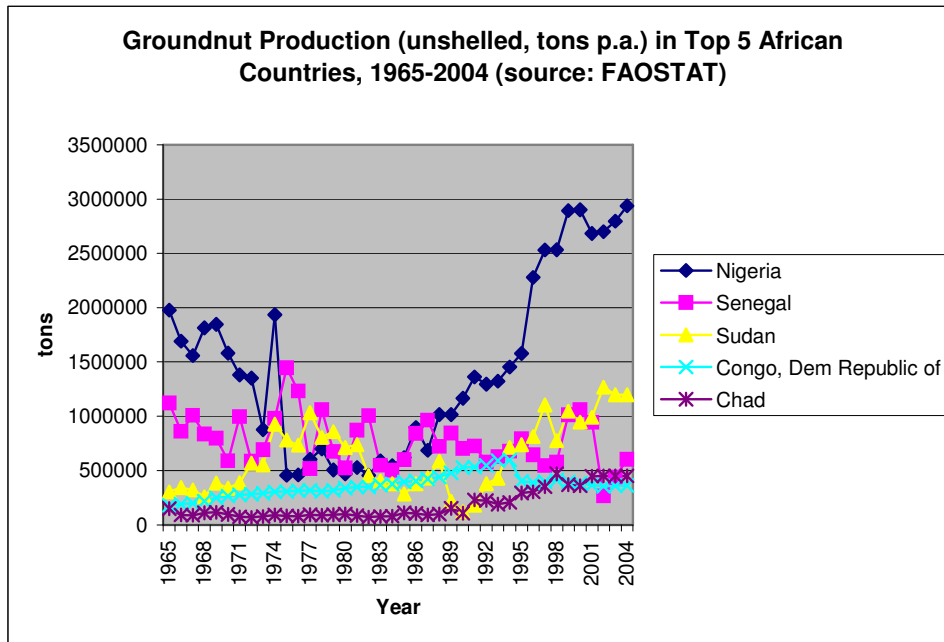
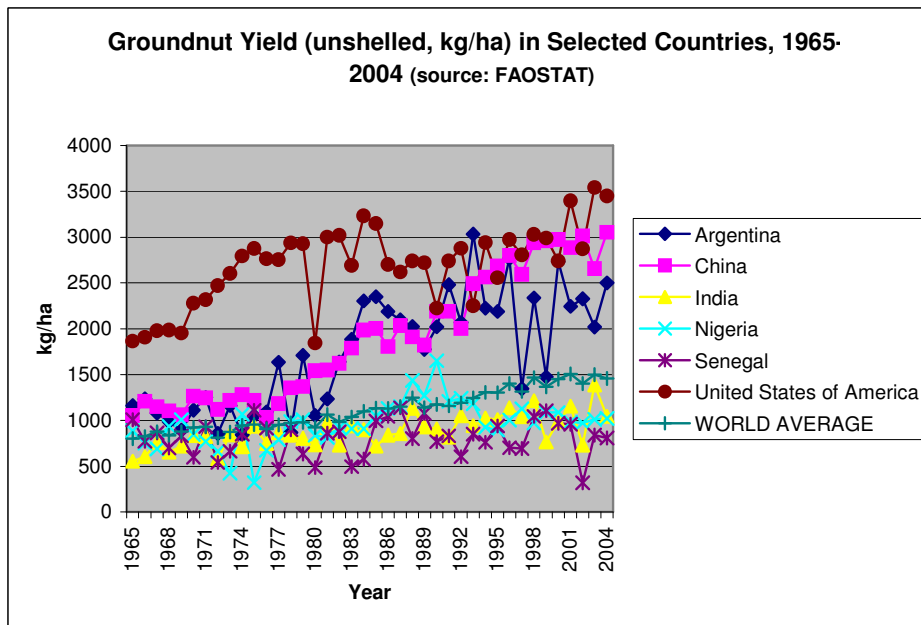


Figure 2 shows groundnut yields in a number of major producing countries over the same period. Average world yields have been rising over time, driven by progress in countries such as China, Argentina and USA.

Figure 2



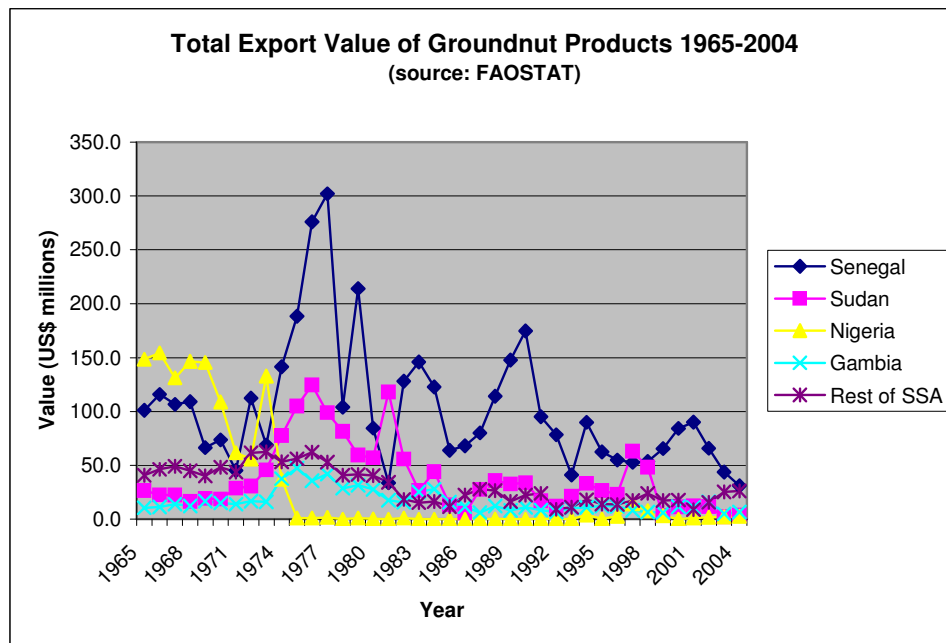
According to Figure 2, Nigerian yields fluctuated around the world average level until 1993 (with lows in 1973 and 1975 and peaks in 1988 and 1990), but have fallen increasingly behind the world average since then. Combining Figures 1 and 2 we see that Nigeria's production expansion since 1985 has been driven entirely by area expansion (extensification) after a brief initial spurt in yields. Meanwhile, Senegalese yields have exhibited considerable variability throughout the period (due to rainfall, amongst other factors), but with no obvious trend². They have thus fallen increasingly behind the world average level, being 89% of the world average during 1965-74, 75% during each of 1975-84 and 1985-94 and only 59% of the world average during 1995-2004.

Trade Trends (African and World)

Figure 3 shows the total value of exports of groundnut products from selected SSA countries since 1965. These totals comprise exports of groundnut oil, cake and shelled and unshelled nuts. The major components of the "Rest of SSA" total are Malawi (where shelled nut exports peaked in 1980-81, then collapsed) and Mali (where exports of shelled nuts and oil peaked in 1977, then halved).

Whilst Nigeria was a significant exporter (of shelled nuts, oil and cake) in the 1960s, these exports collapsed when production collapsed in the mid-1970s and the subsequent production increase has almost all been destined for the domestic market. Much of Senegal's production has been exported, so export trends are similar to those shown in Figure 1 for production. During the period 1965-2004, around 70% of Senegal's groundnut exports by value have been groundnut oil, 20% cake and 10% shelled nuts.

Figure 3



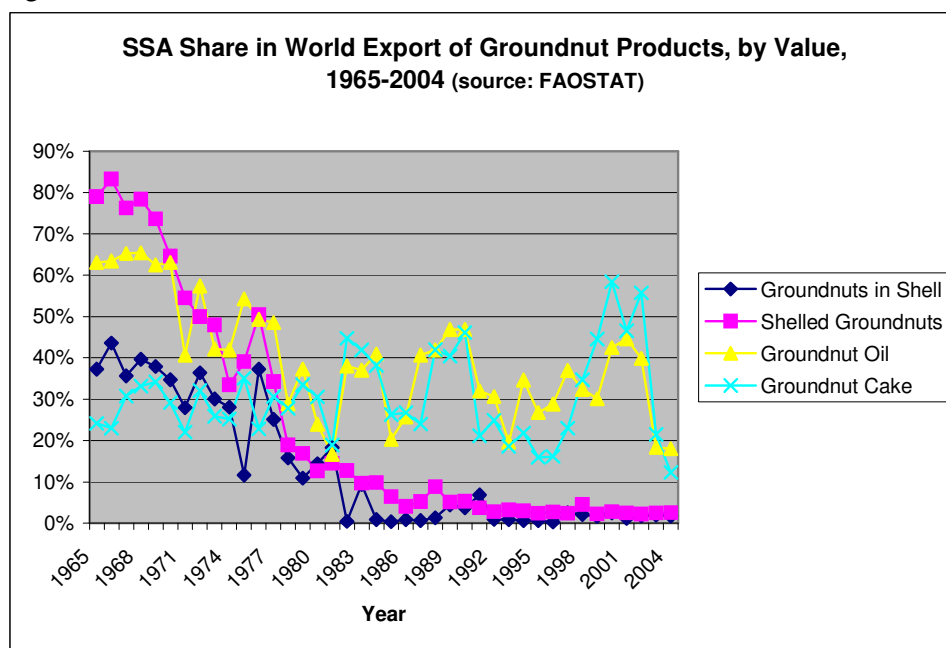
² If yields are regressed against time, the coefficient on the time variable is positive, but small and insignificant, whilst the R² is only 0.08.

During the period in question, groundnut oil has accounted for around 45% of the value of SSA's exports of groundnut products (driven by Senegal), followed by shelled nuts (35%). However, SSA's share of world trade in shelled and unshelled nuts collapsed during the 1960s and 1970s and has never recovered (Figure 4). SSA's share of world trade in oil has also declined, although less dramatically. Its share in world exports of cake (the by-product of oil processing) has fluctuated, but without any discernible trend.

Groundnut oil exporters can be divided into two main categories:

- Groundnut producing countries (Senegal, Argentina, China, USA throughout the period; Brazil 1970s-mid-1980s; India since 2003);
- Countries that either import and re-export groundnut oil or import the raw materials and process them (France throughout the period; Netherlands since 1980; Belgium since 2000).

Figure 4



In market share terms, therefore, SSA has done better in groundnut cake and oil than in respect to shelled and unshelled nuts. However, the value of trade in groundnut oil and cake has also been in decline, in absolute terms and relative to trade both in other groundnut products (Figure 5) and trade in other edible oils (Figure 6). In particular, world trade in palm oil and soya oil³ accelerated dramatically from the mid-1970s onwards, such that the share of

³ The production of soya oil has increased essentially as a bi-product of the rising demand for soya meal as an animal feed, especially for the poultry industry. With plentiful supplies, soya oil trades for roughly the same price as palm oil. The major producers include the USA, Brazil and Argentina. Brazil in particular has seen a soya boom during the last 25 years, with millions of hectares of land cleared for mono-crop, extensive, mechanised soya cultivation. A massive bulk storage, handling and transport infrastructure has been established by the main multinational commodities traders, including Cargill and ADM, to enable the relatively low value, high bulk soya bean crop to reach international markets economically.

groundnut oil exports in the total value of world edible oils trade, which had stood at 12% in 1965-69, was reduced to 7.3% in 1975-79 and only 1.1% in 2000-04.

Figure 5

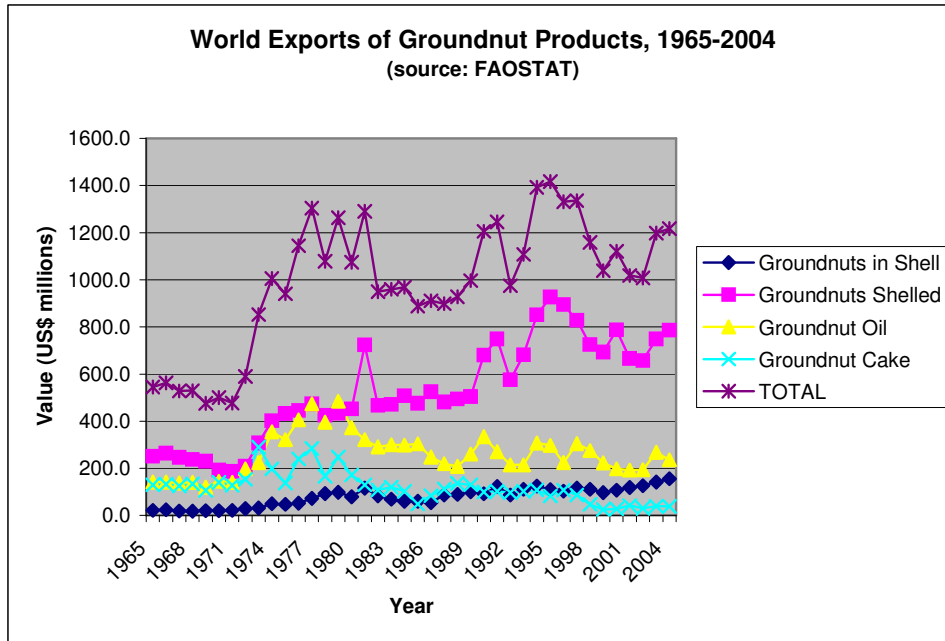
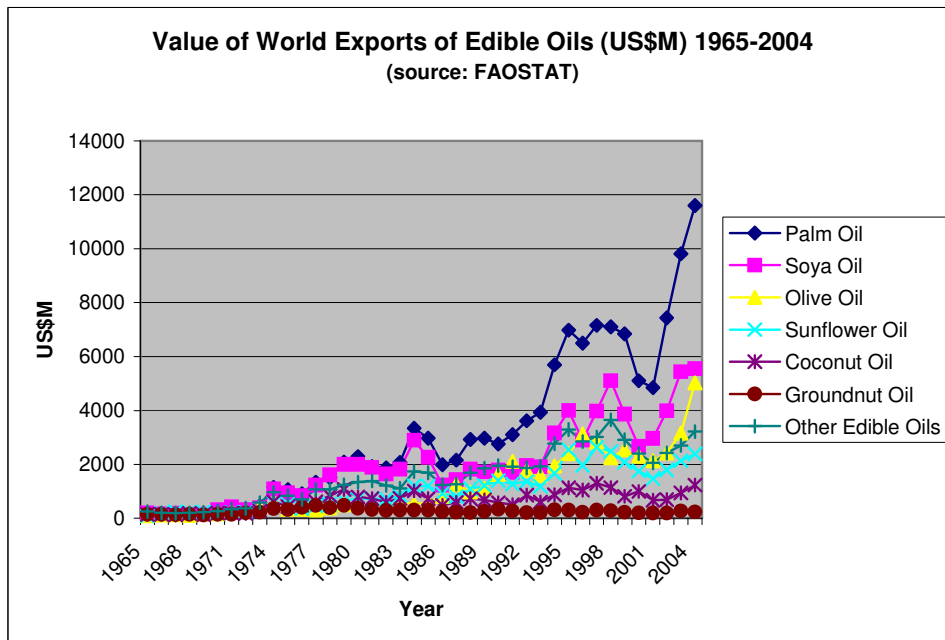


Figure 6

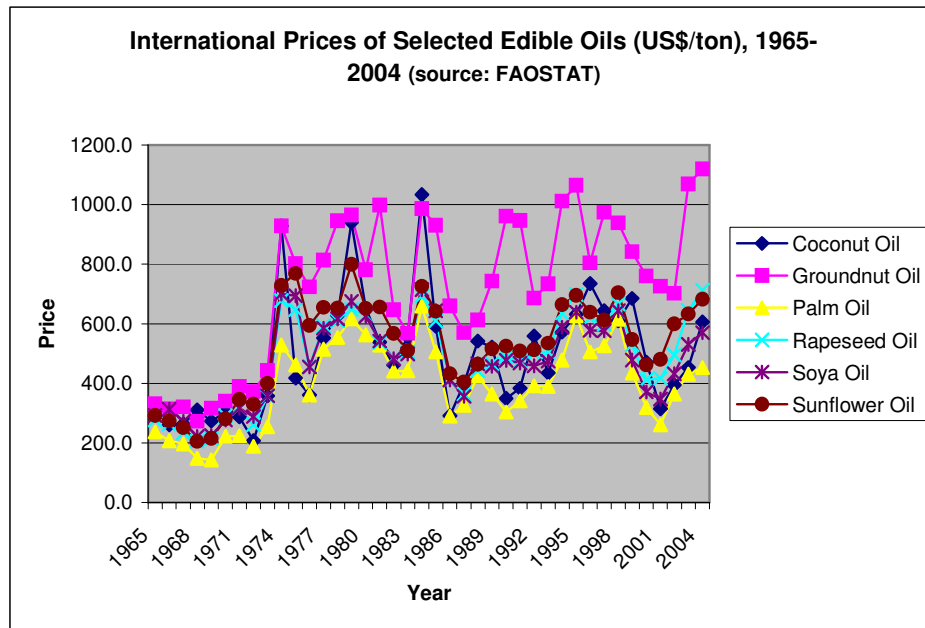


Prices

Figure 7 shows trends in international prices of edible oils. Olive oil is not included in this figure, as it is much more expensive than other oils (groundnut oil is around 30% of the price of olive oil) and its inclusion in the figure would make it more difficult to distinguish trends in the cheaper oils. Figure 7 shows that prices have fluctuated over time. Over the period in question there has been no decline in prices in nominal terms, but there has been a long-term decline in real terms. Prices of edible oils are positively correlated with the petroleum price due to substitution possibilities through biofuels, which are currently the subject of considerable interest internationally.

Figure 7 also shows that groundnut oil is differentiated from higher volume edible oils on price. It has a high smoke point⁴, so is valued for frying, but is also used in salads. It can have a distinctive taste, although there are different cultural preferences here. American groundnut oil tends to be mild-flavoured, whereas groundnut oil used in Chinese cuisine (e.g. stir fry) is more likely to have a distinctive groundnut flavour. On the down side, widespread nut allergies mean that groundnut oil cannot be used in mass market products.

Figure 7



Most major groundnut producing countries (including US, China, India and Brazil) produce groundnut oil for their own domestic markets. Thus, the main international market for groundnut oil is western Europe, where groundnuts are not grown. During the past decade, seven of the top ten importing countries for groundnut oil have been in western Europe, the others being Hong Kong, USA and China. Between them, these seven countries accounted for 70% of global imports of groundnut oil (source: FAOSTAT).

⁴ The smoke point is the “stage at which heated fat begins to emit smoke and acrid odours, and impart an unpleasant flavour to foods” (<http://allrecipes.com/advice/ref/ency/terms/8573.asp>).

Senegalese Experience

In the terminology of the study terms of reference, the Senegalese groundnut sector represents a “negative turnaround” over the past four decades. As of 1970 the sector represented “a success story for the rapid transformation of a subsistence economy into an export-oriented cash crop economy” (Kelly *et al.*, 1996). However, the world does not stand still and the sector has struggled to retain its international competitiveness for most of the subsequent period, gradually losing ground to other groundnut producing countries and substitute products. Sector narratives focus on the problems that it has faced since at least the early 1970s (Mackintosh, 1989; Faye *et al.*, 2001). Various policy reforms and institutional innovations have been undertaken in response to the sector’s difficulties, but without solving the fundamental competitiveness problem.

Our overall observation in this study is that African export sectors have enjoyed sustained success where they benefited either from optimal agro-ecological conditions or from very high labour intensity (only imperfectly substitutable with capital). Either of these factors can afford a degree of natural protection against competition from countries with better infrastructure and more efficient institutions. The Senegalese groundnut sector enjoys neither of these advantages, however. On the agro-ecological side, the soils of the so-called Peanut Basin⁵ have poor structure and low organic matter content, which makes fertility maintenance difficult under intensive cultivation, whilst dry years come fairly frequently, as reflected in the yields shown in Figure 2. Groundnut processing can be labour-intensive, but the same processes can also be readily mechanised. Until 1967 the sector enjoyed preferential prices within the French market. However, since the removal of this privilege, a casualty of France’s negotiations with neighbours to form the European Economic Community (later EU) single market, the sector has been exposed to the full force of international competition.

To remain competitive in such circumstances, a sector must continually increase its productivity, so as to match improvements achieved in other countries. This requires that it invests heavily in research and that it pursues policies and develops efficient institutions to encourage and enable farmers to invest in production enhancement.

Development of the groundnut sector began in the colonial period. Major emphasis was placed on varietal and other research and associated extension, such that by 1951 half of the groundnut production in the territory was attributable to improved varieties (Bonneuil, 1999). Both French and national researchers contributed to groundnut research in Senegal after independence. An important development on the varietal side was the successful development and extension, in the early 1970s, of shorter-cycle peanuts which are well-adapted to conditions in the drier zones. According to Kelly *et al.*, 1996, without these, groundnut production might well have collapsed in half the Peanut Basin. Meanwhile, major efforts were made during the 1960s to promote animal traction and fertiliser use amongst groundnut farmers. Ready availability of credit (discussed below) encouraged the near universal adoption of animal traction amongst groundnut farmers. This facilitated timely planting, which is important for good yields. In addition, during the 1970s locally manufactured (artisanal) harvesting blades were increasingly used in conjunction with animal traction for groundnut harvesting. This was particularly beneficial where the shorter-season groundnuts were cultivated, as it was vital that they were not rained on once they had matured (as this

⁵ The Peanut Basin comprises 33% of Senegal’s land area and is home to 65% of the country’s rural population. It is a rainfed agricultural area that accounts for 80% of the country’s groundnut exports and 70% of its cereal production.

causes re-germination). The adoption of animal traction and associated mechanisation raised labour productivity and permitted increased areas to be planted to groundnuts. However, according to Kelly *et al.*, 1996 (p10), “technical innovations have – at best – only prevented yields per hectare from declining in response to the adverse environment”.

Meanwhile, since the mid-1970s there are no examples of major technical change within the sector to rival shorter-cycle peanuts or animal traction and associated mechanisation.

At the macro-economic level, the most important policy affecting the groundnut sector was the real exchange rate. However, this was, at least in part, out of Senegal’s hands, as the country is a member of the FCFA currency zone. According to Badiane and Kinteh, 1994, the real exchange rate depreciated during the latter 1960s and 1970s, which was beneficial to export activity, but appreciated strongly during the 1980s. The country also taxed its groundnut exports until 1984. However, again according to Badiane and Kinteh, 1994, the rate of export taxation was declining from the latter 1960s until this point.

Aside from maintaining its initial momentum in research, the biggest challenge facing the Senegalese groundnut sector has been that of evolving efficient institutions to enable farmers to access sufficient quantities of high quality inputs, without simultaneously penalising them through depressing the producer price. Arguably, the sector has failed to achieve this balance for most of the period under consideration.

Provision of high quality groundnut seed to large numbers of smallholder producers represents a major challenge, primarily because of the large quantities required. According to Kelly *et al.*, 1996, groundnut seed has a low reproduction rate, such that it takes 10kg of seed to produce 100kg peanuts, whereas for millet only 1kg is needed. On the supplier’s side, this means that large quantities of working capital are required to multiply the seed. For the smallholder producer, the high seeding rate may discourage the use of expensive, certified seed unless seasonal credit is available.

From pre-Independence times right through to the 1990s, Senegal’s policy makers considered it unrealistic for the country’s under-capitalised private sector to take responsibility for the huge quantities of peanut seed required by the farmers in the Peanut Basin. Thus, there was heavy state involvement in the sector from the start. In the early 1960s the state was responsible for research and extension, seed supply and credit provision, but French companies and their Lebanese agents purchased the nuts from farmers. Suspicion of the prices paid by these private buyers led to the primary marketing function being taken over by cooperatives during the 1960s, with a state company also responsible for processing the nuts into oil.

Under this vertically-coordinated, single-channel arrangement, groundnut seed was provided on credit, through the cooperatives, to every adult within the Peanut Basin for whom the annual head tax had been paid. The entitlement was 100kg per man and 50kg per woman, distributed through the head of household. As argued by Goetz, 1993, the household head’s power to distribute this groundnut seed became central to social organization within the Peanut Basin. Seasonal workers from other parts of the country came to work for groundnut producing households in exchange for accommodation plus sufficient groundnut seed and access to a plot of land on which they could grow their own crop, having fulfilled the duties required by their employer. Goetz, 1993 shows that these seasonal workers also made a positive contribution to household food production, net of their own consumption whilst

staying with the family. As with cotton in other Francophone African states, a strong cash crop sector thus drove agricultural development efforts more generally.

Households within the Peanut Basin could also obtain subsidised fertilizer on credit and, as mentioned earlier, longer-term loans were also provided by state banks to assist households to invest in animal traction. The groundnut producer price was adjusted downwards to cover the costs of providing these services and to generate a net fiscal surplus for the state.

Whilst the state-dominated single-channel system was effective in driving the initial development of the groundnut sector, the costs of running the system escalated over time. Badiane and Kinteh, 1994 show that these costs (described as “transfer costs” in their analysis) rose throughout the late 1960s and 1970s. A significant turning point in the viability of the system came in 1970 when credit “forgiveness” was offered to producers who had struggled to pay their loans as a result of a dry season. This created an extremely damaging precedent. The experience was repeated in 1972, 1973, 1977 and 1979 (all the years of low yields in Figure 2!). By the late 1970s, instead of generating a net fiscal surplus for the state, the groundnut sector was draining resources from it, contributing to the wider pressure for economy-wide structural adjustment. The sector’s financial difficulties also further restricted the prices that could be paid to producers.

Reforms were introduced from 1980 onwards. Private traders have gradually been allowed back into groundnut marketing, lowering marketing costs within the sector (Badiane and Kinteh, 1994), although prices have remained centrally determined. However, the credit system has never recovered to service the majority of producers, whilst the viability of fertiliser use declined following the removal of fertiliser subsidies in 1985.

SONACOS, the dominant oil processing company (partly state-owned) was given responsibility for organising primary marketing of groundnuts in 1980. Over time, private traders gradually replaced cooperatives as buying agents. SONACOS thus assumed responsibility for price setting. To compensate producers for the end of fertiliser subsidies, the groundnut producer price was raised in 1986. However, this coincided with a few years of low international prices (Figure 7) and could not be sustained. The value:cost ratio (VCR) for fertiliser use on groundnuts has thus fallen significantly since 1985 (Kelly *et al.*, 1996)⁶.

Given the culture of credit default and forgiveness that had developed during the 1970s, the provision of groundnut seed on credit was replaced in 1981/82 by a “retenue” tax (forced savings mechanism), whereby 10% of groundnut sales were retained at harvest to pay for seed for the following year. (The proportion was raised to 20% in the following year). However, the seed allocation was still 100kg per man and 50kg per woman, irrespective of quantity sold, so quantities sold through official channels dropped. In 1986/87 the entire seed entitlement system was stopped. Instead, farmers were left with four options for accessing

⁶ The declining profitability of fertiliser use, of course, also has implications for the possibility of supporting fertiliser use through seasonal credit. Kelly *et al.*, 1996 quote the findings of Kelly (1988) that, using available historical input/output data with 1987 groundnut prices (unsustainably high!) and fertiliser prices, the VCR for fertiliser on groundnuts in higher potential areas of the Peanut Basin was greater than the benchmark level of two for most years but less than two in 40% of years. In other words, fertiliser application on groundnuts was highly risky after the removal of fertiliser subsidies. It was less profitable and more risky still in low potential areas of the Basin. Their conclusion was that any credit system would require highly flexible repayment to allow farmers to cope with bad years and thereby gain benefits from fertiliser use over the longer term. This recommendation, however, only made sense for the higher potential areas of the Basin. Further price declines during the 1990s further eroded the profitability of fertiliser use on groundnuts.

seed: either store their own seed, buy seed on cash, access credit (which only a small minority could do, as availability of institutional credit had largely dried up during the 1980s)⁷ or join a seed bank run by SONAGRAINES, the seed unit of SONACOS. According to Kelly *et al.*, 1996, none of these options was popular with farmers. The first tended to be the default, but ran up against the problems of storage pests and the fact that households tended to eat stored seed eaten if they were hungry. Groundnut production thus fell fairly steadily during the 1990s (Figure 1). Moreover, more seed retention and reuse by farmers makes it more difficult for SONAGRAINES to maintain the quality of the national seed stock over time, as certified seed comes from SONAGRAINES "security stock".

With declining groundnut production and export volumes, the financial health of SONACOS became a cause of increasing concern. The 1994 FCFA devaluation, combined with high world prices, provided some short-term relief following a few difficult years, but world prices began to decline again from 1997. In 1995 a further bout of economic reform had included liberalisation of vegetable oil import into Senegal, generating the ironic situation that import taxes on such oils, which were nevertheless cheaper than local groundnut oil in the domestic market, could be used to support producer prices for groundnut production for export. The result of these (unsustainably) high producer prices can be seen in Figures 1 (higher production) and 3 (increased export revenues). However, during 1998-2000 the cumulative deficit of SONACOS was close to CFAF11 billion (FAO, 2003). This was not helped by the need to make large investments to meet the requirements of several EU directives including Directive no. 1525/98, which set aflatoxin-related residue limits for various food products including groundnuts⁸. The same ruling also reduced the number of ports of entry for Senegalese groundnut products to only two cities (Marseille, Le Havre) from January 2000, thereby reducing the flexibility of the country's exporters (FAO, 2003).

As a result of the financial pressures, various further reforms have been undertaken since 2000. In December 2001 SONAGRAINES was closed down, with much of the responsibility for seed supply shifting to a private company, NOVASEN, that was involved in all activities from the supply of seeds to the export of final product. However, initially NOVASEN lacked the capacity to handle the entire national demand of 35,000 tonnes, such that groundnut seed was in short supply for the first planting season or two after the change. When combined with adverse weather in 2002, production fell accordingly (Figure 1).

With SONACOS scheduled for privatisation in March 2003, another change for the 2001/2002 season was that the multi-stakeholder National Groundnut Council (CNIA) assumed responsibility for setting the producer price. This decision had actually been taken in 1995, but not implemented for several years. (The use of multi-stakeholder bodies for price setting mirrors the approach recently adopted in certain Francophone cotton sectors, including Burkina Faso – see cotton case study).

In 2004 the sector again received state support in the form of subsidised seeds and fertilisers. It remains to be seen whether the new institutional arrangements within the sector will be

⁷ According to Kelly *et al.*, 1996, despite the lack of price competition at primary marketing, the development of credit relationships between private buyers and farmers was impeded by the fact that the buyers were not allocated the same purchasing areas each year, so could not build up knowledge of, and relationships with, individual farmers.

⁸ Aflatoxin contamination occurs when poor drying or storage of groundnuts allows the invasion of the fungus *Aspergillus flavus* into the groundnut pod/kernel.

sufficient to restore producer incentives and to restore the competitiveness, now on both international and domestic markets, that has been lost over the previous three decades.

Producer Response to Changing Policies and Conditions within the Sector

Faye *et al.*, 2001 discuss changes in farming systems and livelihoods within Diourbel Region, part of the Peanut Basin, over the previous forty years. They emphasise that rural households have adapted their livelihoods as groundnut production has become less attractive over time, highlighting the elimination of fertiliser subsidies and the reduced access to seed on credit during the 1980s as key milestones along the way. Their observation is that fertiliser use on groundnuts virtually collapsed following the elimination of fertiliser subsidies, but, perhaps surprisingly given the reduced access to seed on credit, seeding rates were increased to partially compensate for the effect on yields of lack of fertiliser. They suggest that lower fertiliser use, but higher seeding rates, sustained farmers' returns to groundnut production through this period.

Taking a broader view of farming systems, the area planted to groundnuts was reduced in favour of millet and sorghum (grown for own consumption and for local markets), whilst increasing emphasis was placed on livestock keeping. Increasing numbers of small ruminants were encouraged by rapidly rising mutton prices, whilst cattle were kept for milk, but also valued for their draught power and manure benefits (the latter also partially compensating for the fall in inorganic fertiliser use on groundnuts). A semi-intensive livestock model has evolved (relying on crop residues and by-products, rather than purely on grazing).

Meanwhile, households in the region have become increasingly reliant on remittances from family members in major urban centres or abroad. Faye *et al.*, 2001 observe that remittance income is used primarily for consumption purposes. If it is invested in farming activities, it is in livestock, rather than crop inputs.

Confectionery Groundnuts

Warning and Key, 2002 analyse the effect on producer households of growing confectionery groundnuts, rather than groundnuts for oil. Confectionery groundnuts are different varieties from oil groundnuts (confectionery groundnuts are larger) and they are also subject to more rigid quality standards in final markets.

As noted in Figure 5, it is shelled groundnuts (which includes confectionery groundnuts) that have seen the most rapid growth in world trade since the 1960s. The government of Senegal saw the potential of confectionery groundnuts in the early 1960s and began trials, leading to smallholder production commencing at the end of the decade. However, although 20,000 hectares were cultivated in 1975, the responsibility for promoting confectionery groundnut production was passed around five different agencies during the period 1965-85 and potential was not realised.

In 1990 NOVASEN, a Senegalese-French private company, with minor SONACOS shareholding, assumed responsibility for promoting confectionery groundnuts. It developed a contract farming scheme that at one stage served 32,000 farmers, with 80% of the resulting production exported to the EU. Local company agents chose and monitored producers, who

received 150kg of fertiliser on credit per hectare of confectionery groundnuts cultivated. As a result, these contract farmers achieved average yields of around 1300 kg/ha, compared to 800 kg/ha for oil groundnuts (Figure 2). This made production of confectionery groundnuts more profitable than production of groundnuts for oil. NOVASEN also paid slightly higher prices for confectionery groundnuts than was offered to producers of groundnuts for oil. Demand to participate in the scheme was high, as a result of which NOVASEN could claim credit repayment rates of 98%+ in normal years and over 80% even in years of poor rainfall, compared with an average of only 58% for the residual state-sponsored oil groundnut programme during 1990-95 (Warning and Key, 2002).

However, FAOSTAT data show a collapse in shelled groundnut exports from Senegal after 1999, from an average of 9800 tons p.a. during the 1990s to only 1800 tons p.a. during 2000-04 (and less than 250 tons p.a. during 2003 and 2004). This is linked to the increasingly strict controls on aflatoxins imposed by the EU (Otsuki *et al.*, 2001).

Conclusions from the Senegal Groundnut Case

The Senegalese groundnut sector benefits neither from optimal agro-ecological conditions nor from very high labour intensity (only imperfectly substitutable with capital) that would afford a degree of natural protection against competition from countries with better infrastructure and more efficient institutions. Since the mid-1970s, international edible oil markets have witnessed the rapid rise of palm and soya oil in south-east Asia and Latin America respectively, driven by relentless, research-led progress in yield enhancement for these crops. To remain competitive in such circumstances, the Senegalese groundnut sector needed to continually increase its productivity. This would have required it to invest heavily in its own research and to pursue policies and develop efficient institutions to encourage and enable farmers to invest in production enhancement. In practice, it has not been able to do this. Early momentum with research has not been sustained, whilst the sector has failed to evolve efficient institutions to enable the majority of farmers to access high quality inputs without simultaneously penalising them through depressing the producer price. The persistent financial pressure that has resulted from declining competitiveness has, in turn, not made it any easier to invest in productivity enhancement for the future.

Groundnuts now account for around 50% of Senegal's agricultural exports, a considerable drop from the start of the period, with cotton, horticultural products and hides and skins now making up the other half. However, this "diversification" owes as much to the decline in the fortunes of the groundnut sector as to growth in these other sectors.

Latterly, the sector has also encountered increasing export barriers in the form of tighter controls on aflatoxin contamination in its main EU market. This has imposed additional costs on the groundnut oil sector, but appears to have had an even greater impact on confectionery groundnut production [CONFIRM].

Experiences with Import Substitution

As argued by Diao *et al.*, 2003, Africa's domestic and regional markets are critical for supporting agricultural intensification efforts. Diao *et al.*, 2003 review figures on exports from and imports to Africa. These show that on average, during 1996-2000, SSA exported US\$317 million worth of oilseeds and US\$359 million worth of oils and fats, but imported US\$1,239 million worth of oils and fats. Import substitution possibilities clearly exist if local producers can compete – possibly with modest levels of protection – against imported palm oil. In this section we review contrasting experiences with import substitution efforts.

A Kenyan Experiment with Sunflower Production

Africa's dependence on imported palm oil is illustrated by the situation in Kenya. The domestic demand for vegetable oils is around 380,000 tons p.a., and three-quarters of this is normally met by imported palm oil. It represents the second largest foreign exchange cost for the country after petroleum products. The Government has long been concerned about this, believing that, as a country with a strong agricultural sector, it should be capable of being self-sufficient in vegetable oils.

In the mid-1980's CDC participated in a high profile venture aimed at promoting national oilseed production. The main importer and refiner of palm oil was East African Industries Ltd (EAI), a subsidiary of Unilever. It came under political pressure to do more to promote domestic oilseed production.

In 1981 it began a pilot scheme to provide inputs and technical advice to help farmers grow such crops as sunflower and rape seed. In 1985 it was decided to expand the pilot into a large-scale commercial enterprise. The objective was to provide services to 20,000 smallholders by 1988, who would cultivate 20,000 ha per year of sunflower. It was also intended to assist 5,000 large-scale farmers to plant a further 24,000 ha of sunflower and rape seed. In total it was anticipated that this would yield 50,000 tonnes of vegetable oil.

A new joint venture was created in 1986 called Oil Crop Development Ltd (OCD). Equity finance of KShs110m (approximately £6.9m) was raised of which CDC provided 35%, with the balance provided by East African Industries, the IFC and a local development finance company. EAI provided the management. The guest of honour at the investment signing ceremony was the then Vice President (and now President) of Kenya, Hon Mwai Kibaki.

In addition CDC provided a long-term revolving loan facility of £7.5m to Barclays Bank of Kenya for on-lending to agricultural and transport contractors, and to oil seed milling companies so that they would have the facilities to cope with the anticipated increase in oil seed production.

The concept was that OCD would provide inputs and services on credit to contracted growers in return for the exclusive right to buy the grower's crop. The cost of the input and services would be recovered from the value of the crop. EAI in turn undertook to ensure a market for the resulting vegetable oil. There was a good uptake of the input packages offered by OCD,

and by 1987 the area under oil seeds in the country reached 113,000 ha, a peak which has never since been achieved⁹.

Kenya already had substantial experience of successful outgrower/smallholder production schemes for other crops, especially tea, sugar and coffee, and so there was some surprise when OCD quickly ran into financial difficulties. From the first year of operations there was a high default rate on the repayments due to OCD by contracted growers.

CDC's newly recruited smallholder specialist was asked to examine the situation and he reported that a number of classic errors had been made¹⁰. The main reasons for the failure of OCD can be summarised as:

Administrative Aspects

The attempt to scale up from a pilot scheme to 20,000 smallholders and 5,000 large-scale farmers in two years was far too ambitious, and overwhelmed OCD's capacity to administer and monitor.

Farming Aspects

Farmers were encouraged to plant sunflower on a commercial scale by the availability of inputs on credit terms. In some areas sunflower in general, or the specific variety and input package available, did not do well. In other areas it grew well, but the gross margins available from sunflower were less than from more traditional crops, e.g. maize, so that farmers quickly lost interest.

Sunflower is generally a more drought tolerant crop than maize and so the tendency is to grow it in more drought prone areas, which inevitably increases the risk of a poor crop and inability to repay debts.

Credit Aspects

The OCD experience illustrates some of the financial risks of promoting a single, annual crop as opposed to considering the entire farming system. The risks are less with perennial crops (e.g. tea, coffee, sugar cane) where the farmer makes a large investment to establish the crop and so is less likely to make short term changes in production.

In addition, since the scheme was implemented quickly and on a large-scale there was insufficient time to assess the credit-worthiness of each recipient of input packages. From the farmers side, they were dealing with a new institution and could not be sure whether it would continue to operate, and provide further credit, in future years. Thus although growers were contracted to sell their crop to OCD, thereby allowing OCD to deduct from the proceeds the costs of inputs and services supplied, they also received offers to buy the crop from traders who had no such deductions to make. Many farmers found the temptation too great to resist. As sunflower is an annual crop and was being grown on a large number of farms spread over a wide area, it was difficult in practice for OCD to enforce its rights to buy, or to pursue defaulting farmers through the courts for debt recovery.

⁹ Kenya Oilseeds and Products Report, USDA (2002). As a result of the failure to expand oilseed production, only 15% of Kenya's oilseed milling capacity is utilised, according to the USDA.

¹⁰ The case study is based on the author's memory of reading the specialist's report and conversations with him at the time, and so there is a risk that errors have crept in, although the author believes the main findings to be correct.

The obvious solution in terms of lowering default risk would have been to build up more gradually a long-term relationship of mutual trust with a network of outgrowers¹¹, but this would have delayed the project's potential impact on saving foreign exchange and reduced its "political punch".

Marketing Aspects

There had apparently been some misunderstanding about the nature of EAI's offer to ensure a market for the oilseeds. EAI saw the sunflower and rape seed oils as substitutes for its imports of palm oil, and so was willing to pay a price equivalent, in oil content terms, to the import parity price of palm oil. Sunflower oil is however more expensive on world markets than palm oil, and growers argued that they should receive the equivalent of the import parity price for sunflower oil.

Thus the OCD/EAI bargaining relationship was not an equal one, with OCD dependent on EAI for a market, but EAI was not dependent on OCD for its raw material as it had the alternative of imports.

OCD was therefore faced with accepting a low domestic price for its oil seeds or exporting them and obtaining a low export parity price (i.e. world market prices less the cost of transport to the world market). In either case, the low prices achievable by OCD meant that relatively low prices were paid to growers who in turn were more likely to find oilseeds less profitable than traditional crops.

Conflicts of Interest

In respect of OCD:

- the Government wanted to save foreign exchange;
- EAI wanted to have access to raw materials as cheaply as possible (i.e. imports) while maintaining good relations with the Government;
- CDC want the scheme to be a financial success so that its investment would be profitable;
- OCD management wanted to achieve ambitious implementation targets;
- and the participating farmers wanted to maximise their short term cash income.

The objectives of each participant were legitimate, but were not easily reconciled through one joint venture organisation.

The result of OCD's heavy financial losses was that its equity capital base was quickly eroded, and the venture was substantially scaled-back in scope. CDC wrote-off its equity investment in 1998.

Conclusions from the Kenya OCD Experience

Successful examples of the promotion of single crops through credit schemes tend to be found where there are exceptionally high margins (e.g. tobacco), perennial crops (e.g. tea) or

¹¹ This approach has generally been followed successfully in the tobacco and cotton industries where major buyers of tobacco leaf and seed cotton establish a network of contract growers for whom they provide credit and services and who may gradually reap the benefits of production specialisation and accumulated expertise.

statutory or other restrictions on output marketing (e.g. cotton). Where single crops are promoted, there needs to be an effective “interlocking” of the supply of inputs/credit and the subsequent sale of the crop through the supporting institution.

A pre-requisite for the sustained adoption of specific crops is that potential buyers offer attractive prices that lead to good margins for the growers. This can be supplemented by special measures (research, training, ensuring availability of inputs etc), but such measures cannot be substitutes for attractive margins in the long term. If attractive prices for a crop cannot be offered, because the product has a low market value, then why should production be encouraged?

Fundamentally, the reason why Kenya imports palm oil, rather than producing its own vegetable oils, is that imported palm oil is cheap, and rather than growing an expensive substitute (sunflower oil) it makes better economic sense to use its scarce land resources for producing tea, coffee, fruit and vegetables for export, and maize, wheat, sugar etc for the domestic market, i.e. the traditional economic case for specialisation and trade rather than self-sufficiency.

Sunflower Production in Uganda

In contrast to the OCD experience in Kenya, for the past few years Mukwano Ltd, a local industrial conglomerate in Uganda, has been developing an outgrower scheme for sunflower in selected districts in northern Uganda. The resulting sunflower oil is destined purely for the domestic market, which benefits from significant natural protection against imported edible oils due to the long distance and high costs of transport from Mombasa port in Kenya.

Mukwano is the only company with industrial-scale crushing equipment for sunflower in Uganda. They have received support from Ministry of Agriculture extension agents in their chosen districts of operation (dry areas in which alternative agricultural opportunities are few) to identify potential outgrowers and provide some of the technical advice for growing the crop well.

Mukwano has concentrated on keeping its costs of operation low, so as to pay the best possible price to growers¹². It provides them with high quality seeds and specifies the guaranteed minimum price at which the resulting sunflower will be bought at harvest time, but has not offered credit. At village level, Mukwano works through a network of contracted private agents, who supply inputs to producers (on a cash basis) and buy them at harvest time at the price set by Mukwano. At district level, these agents are responsible to “district coordinators”, again private entrepreneurs who either own or have rented sufficient storage space to hold supplies of sunflower received from village agents. Mukwano then collects sunflower from district level in its own transport, achieving economies of scale in transportation.

¹² Global experience is that prices paid to producers within contract farming schemes start high, as the processing company seeks to raise volumes to achieve satisfactory capacity utilisation at its processing plant(s). However, once a reliable supply base has been built up, real producer prices may be allowed to fall over time (a process known as “agribusiness normalisation”) unless either new competitors enter the market or the company(ies) concerned pursues a strategy of continued expansion beyond the original target market. It remains to be seen what will happen to the prices paid by Mukwano over time.

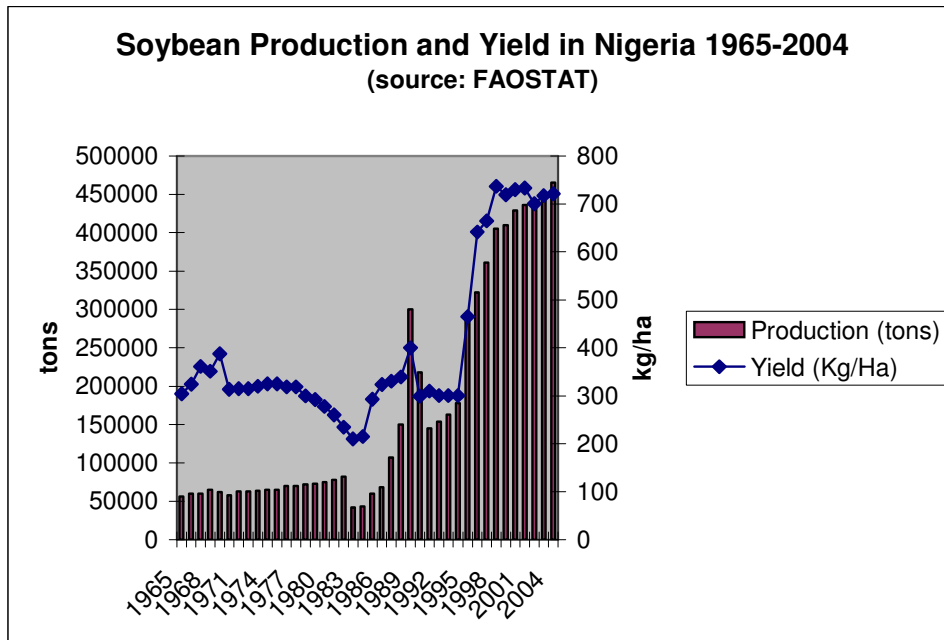
According to J.E.Austin Associates Inc for Chemonics International Inc, 2005, the returns to producers from the sunflower scheme are attractive. Thousands of outgrowers now participate in the scheme.

As with OCD in Kenya, Mukwano has sought to scale up its sunflower outgrower scheme quite rapidly. This has been possible due to the active participation of Ministry of Agriculture extension agents and also the fact that Mukwano has not used credit as a means of promoting the scheme (thus reducing the need to build up knowledge of, and relationships with, individual farmers). Rather, it has worked in an area where farmers have few alternative income earning opportunities and has focused on making the output price attractive. It has been able to offer an attractive output price because it has developed a model where its costs are kept low, but also, fundamentally, because Uganda is a landlocked country and its domestic edible oil market benefits from substantial natural protection against imported edible oils due to high transport costs from the coast.

Soybean Promotion in Nigeria

Figure 1 showed the great strides made to increase groundnut production (for the domestic market) in Nigeria since the onset of macroeconomic and agricultural reforms in 1985. Starting around the same time, the country has made similarly impressive gains in promoting soybean production by smallholder producers (albeit on a somewhat smaller scale). Figure 8 summarises this progress.

Figure 8



IITA was heavily involved in the promotion of soybean, as this was focused on the dissemination of so-called dual-purpose varieties that both achieved higher yields than varieties previously used by farmers and also contributed significantly more nitrogen to the

soil, thereby enhancing the sustainability of the overall farming system. Average soybean yields within Nigeria increased from around 300 kg/ha in 1985 to over 700 kg/ha in 2000.

However, whilst there was a strong emphasis on the contribution that the new varieties could make to soil fertility management, the promotional efforts also focused both on stimulating local (village-level) utilisation of soybean and expanding wider market opportunities through establishing links with large-scale processors. At village level, households were sensitised to ways that soybean could be incorporated into traditional recipes, whilst at community level simple processing equipment was promoted (for use by individual entrepreneurs or farmer groups) for production of soymilk. These activities allowed production to expand and farmers to learn how to raise their productivity without local prices collapsing. Perhaps of greatest interest, however, discussions were held between the promoters of soybean and commercial processors, to encourage the latter to buy from smallholder producers. This was necessary to finesse the problem whereby, at low volumes and the high prices prevailing in local markets, commercial processors were not interested in sourcing locally (when soybeans could be sourced more cheaply through importation). However, without some sort of guaranteed market, producers were unwilling to make the necessary investments to raise production to the levels that were of interest to commercial processors.

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