

Soya boom in Gúruè has produced few bigger farmers – so far

By Joseph Hanlon and Teresa Smart

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Thousands of subsistence farmers in Gúruè district are earning small amounts of money from soya. However, there are few larger farmers. And land conflicts are increasing.

Profit can be Mt 8500 (\$300) per hectare or more. We estimate that this year in Gúruè about 2200 subsistence farmers earned an additional \$200 each from soya, and that 800 earned between \$300 and \$1000. Finally, about 100 farmers earned more than \$1000 profit from soya, and have become small commercial farmers – sometimes called "emergent farmers". These are still relatively small amounts of money, but a decade ago most of these farmers only earned pennies.

Gúruè produced nearly 6000 tonnes of soya this year, adding more than \$2 million to the local economy. Soya is a "revolution for the population," Gúruè Permanent Secretary Tito Celestino told us. And the growth potential for soya is huge.

This has created a land rush, with outside investors looking for land while local producers are anxious to expand. "Land conflicts are already a problem, and will become much more serious," Celestino added. In addition to the small scale subsistence and commercial farmers, there are already five large companies involved with production in Gúruè. Three have developed community links with contract and sharecropping programmes. So far none are producing significant amounts of soya on their own. In areas like Ruace, near the old state farm at Lioma, there is already a shortage of land for would-be emergent farmers because of land allocated to big companies.

Soya is seen as a success story – a profitable small holder crop which is taking off rapidly. Soya beans are now in demand to feed chickens and soya grows well in Gúruè and surrounding districts; in these areas, substantial increases in production are possible. The current price is Mt 17 per kilogramme, double that for maize. The Brazilians introduced the crop to the Lioma state farm in the 1980s and World Vision attempted to reintroduce it in 2002. But it was the successful push of a technological package from 2004 by donors and NGOs – Clusa, TechnoServe, Gates, Norway, Switzerland, the United States, International Institute of Tropical Agriculture (IITA) and others – that turned it into a profitable crop.

This has not been private, for-profit intervention, but rather support by an international "public sector". The private sector has only entered more recently, in particular with contract farming in partnership with NGOs and donors.

Three lessons can already be drawn from the soya experience:

- More than 100 Mozambicans have become small commercial farmers – proof that Mozambicans are not different from Zimbabweans and South Africans and thus Mozambique can develop an indigenous commercial farming sector, if these farmers are supported.
- At least in prime areas, land competition is already a problem, and the government should be increasingly cautious about giving large tracts of prime land to foreign investors; smaller areas for outside investors and a demand that such investors make links with local farmers makes more sense.
- A substantial level of support from donors and others over a decade was required to make this happen. This is the antithesis of the private sector acting on its own, and is more about governments building the social, technological and even market infrastructure for the private sector.

Soya is a success, but only a small part of rural Mozambique is suitable for soya. Can this experience be replicated with other crops in other places, or is it specific to soya? The "soya model" can be characterised by:

1. Focus on a single crop.
2. There is an assured market. The crop has high demand and high profit.
3. The crop is suitable for some level of mechanisation and thus is appropriate for small commercial farmers with 4-20 hectares.
4. A technology and support package was provided for a decade by the international public sector.

5. Support involves more than just advice and facilitation, and includes concrete support with seeds, ploughing and marketing.
6. Only after the package is proven to be profitable is it slowly taken over by the private sector, through approaches such as contract farming which are often initially public-private partnerships.

In the rest of this article, we will give more details of the soya farmers in Gúruè, look at labour and technology, discuss small scale commercial farmers, provide more information on the five big companies, and then return to the question of the applicability of the soya model.

4400 soya farmers in Gúruè

One-fifth of Mozambican soya producers and production are in just one district, Gúruè. Based on data from Clusa, InovAgro, African Century Agriculture (ACA, formerly known as GETT) and Rei do Agro, plus our own interviews, we estimate that there are 4400 soya farmers in Gúruè who farmed 5000 hectares and produced nearly 6000 tonnes of soya in the 2011/12 season. Table 1 gives our estimate of distribution of farms by size. The vast majority are small, under 1.5 ha of soya, and are not earning much money. Although soya provides a useful income for subsistence farmers, many of the smaller farmers are dropping it as a crop and growing beans or ground nuts instead. Clusa has 6300 soya farmers on its books in Gúruè district, but of those, 3000 did not produce soya in the 2011/12 season.

As Table 1 shows, there are some larger farmers – nearly 1000 farmers in Gúruè district with more than 1.5 ha of soya. But only 100 of those have more than 4 ha; they have profits of more than \$1000 per year and can be considered small commercial farmers or emergent farmers.

Table 2 shows that a fifth of soya farmers, in all size groups, are women.

Table 1: Gúruè district soya farmers, estimates of 2012 harvest

Farm size	Number of farms	Production, tonnes	Average profit	
			Mt	\$
< 0.5 ha	1300	400	2400	85
0.5 – 1.5 ha	2200	2400	7400	260
1.6 – 4 ha	800	2300	20000	690
> 4 ha	100	700	47000	1650
TOTAL	4440	5800	9000	315
Large commercial	1	200		

Table 2: Women in Clusa groups

Farm size	%age women
0, did not grow soya	23%
< 0.5 ha	20%
0.5 – 1.5 ha	16%
1.6 – 4 ha	24%
> 4 ha	19%
TOTAL	21%

Hoes and tractors

So far, the hard work on soya is being done by the small farmers and thousands of day labourers with traditional hoes (*enxadas*). Weeding and harvesting is normally done by hand. But a shortage of tractors and threshers means even emergent farmers are doing most of the land preparation and threshing by hand. Labourers are paid by task (*ganho-ganho*) and earn less than 50 Mt (\$1.75) per day, half the agricultural minimum wage of 2300 Mt per month. Even at this low wage, people are coming from neighbouring districts looking for work.

So far, Clusa and three contract farming companies have been providing a few tractors for ploughing, and there are a few tractors in the hands of associations. Of 5000 ha producing soya, only 1200 ha were tractor-prepared in the 2011/12 season. A serious expansion of soya production will require a hundred more tractors in Gúruè district alone – along with mechanics and workshops. There are still no service centres which sell inputs and pesticides, have extension officers, provide ploughing services and tractors repairs and parts.

A series of inexpensive technological improvements could raise productivity by half or more, which could double profits. IIAM (Instituto de Investigação Agrária de Moçambique, Mozambique Agricultural Research Institute) is developing improved seeds in a project with the International Institute of Tropical Agriculture (IITA). Rhizobium inoculants are bacteria which raise the nitrogen fixing capacity of the soil; they are specific to each legume and are coated on the seeds. ACA, linked to chicken producer King Frango, gave its contract farmers inoculants and Zimbabwean seeds this season which raised production from 1.1 tonnes per hectare to 1.5 t/ha.

More than many crops, soya is time critical. Planting must be in December, and the harvest must be after the seeds dry but before the seed pod cracks open. Planting a month late, for example, cuts production by 40%. So producers must learn to complete all the production steps in time, and mechanisation will be important for expansion.

Small commercial farmers – contracts and credit

It seems likely that the main growth of soya production will come from small commercial farmers with more than 4 ha. The number could double to more than 200 in the next two years, as some of the farmers in the 1.5-4ha range expand their land.

But the transition from subsistence farmer to small commercial farmer is not simple, and there is a broad consensus that it requires three factors:

- An assured and profitable market.
- A technology and support package, with technical assistance, higher productivity through improved seeds and methods, credit, and some mechanisation.
- Changed thinking by the farmer, including the ability to plan and save, increase production areas, hire labour, and invest.

All three are required at the same time. The first two come from outside – from private companies, government, or donors and NGOs – and provide the incentive for farmers to want to increase production and change thinking.

Contract farming and outgrowing seem important ways forward for emergent farmers. The contract company provides inputs and support (usually on credit), and the farmer must sell to the contract company. Three soya contract companies had more than 1000 contract farmers in the 2011/12 season. Each has a different model, but generally they offer technical assistance, provide seed and inoculant, sometimes plough and harrow the land, and sometimes thresh the grain.

Contract farming is already in use in Mozambique for tobacco and cotton. A successful contract farming system builds trust and works to mutual benefit. The farmer receives inputs and services not otherwise available, and the contract company receives grain or seeds or tobacco. But both sides are under economic pressure. Contract companies sometimes pay too little or skimp on assistance to save money. Producers sometimes sell to other traders, known as "side-selling". Productive relations take time and good will to build. ACA head Rachel Grobbelaar says: "You have to build relations with the farmers. A lot is based on trust; we trust the farmers and they must trust us."

But credit and contracts are new in Gúruè, and many people are not accustomed to the new rules, so there have been substantial problems. ACA, which wants soya to feed its own chickens, had by far the largest group of contract farmers. The contract signed last year before the season said ACA (then known as GETT) would buy at 16 Mt per kilogramme. But when the harvest came, traders came in from outside and offered 17 or 18 Mt. Many farmers sold their soya to traders, breaking their contract, and did not repay their debts.

The misunderstanding is substantial. Local peasants say ACA cheated them by offering 16 instead of 18, without taking into account that ACA provided essential services that made the production possible. Many years of NGO and government support have also created confusion, leading to a belief that inputs are donations which are not paid for. Two decades of NGOs, donors and government providing inputs and tractors for nothing, and more recently of the District

Development Fund (Fundo de Desenvolvimento Distrital, FDD, known as the "7 million") which is supposed to be a loan but which few ever repay, has created both a dependence on outsiders and also a belief in a new sort of deal – that the people provide the labour and others provide the inputs for free, and the farmer keeps any sales income.

Contract farming companies elsewhere in the world expect to lose half of their initial clients who do not repay because of poor production or side-selling. Some of ACA's contract farmers were pleased with the support and understand the nature of the contract; they sold their soya to ACA and hope to continue with ACA in the coming season.

Permanent Secretary Tito Celestino told us that local government "has a responsibility to follow up because we want to support investors." They intend to go and meet local farmers and underline the nature of a contract and seriousness of violating a contract.

The smaller Rei do Agro reports more contract applications than it can handle, and says it will screen to make sure they are serious and are not just leaving ACA with unpaid debts and looking for more free inputs. Unlike ACA, Rei do Agro promises to pay the market price on the day, which will benefit farmers if prices continue to rise, but not if they fall – and which also makes it harder for the contract company to plan. Indeed, last year ACA offered farmers a choice of contract – 16 Mt/kg or market price between 14 and 18 Mt/kg. At the time the market price was 13 Mt/kg, so all farmers took the 16 rather than the market price. (Which did not stop them complaining and blaming ACA when the price rose to 17).

However, for many people the very ideas of contract and repayment are new. There is little sense of profit and loss, or of costs, and family labour is never costed.

Three factors seem to characterise the most successful of the emergent farmers:

1. They reinvest profits in production. So far, very few are doing this, and most remain totally dependent on credit.
2. They are diversifying, to spread risk, costs and income. Many have at least started trading, buying crops from their smaller neighbours.
3. They have been previously employed. (A point first made to us by Jake Walters of TechnoServe.)

Armando Katxava in Lioma farms 12 hectares, of which he used 7.5 ha for soya this year. On contract ACA prepared 4 ha and Katxava cleared the rest manually; he has 15 permanent staff and hires additional day labour. A junior administrator in a local school, he began trading in used clothes as well as maize and beans, and growing 1 ha of maize for sale. With the arrival of soya he began producing and expanding, and with the profits opened a small shop and bought a pick-up truck. He then expanded into irrigated horticulture to ensure an income and keep his workers busy throughout the year. He has not borrowed until now but instead reinvests profits; all of his spending is in cash, even the ACA land preparation. He has a provisional title (DUAT) for 26 ha. He is part of a TechnoServe pilot project this year which will allow him to buy a tractor with a 50% discount; he is putting up 10% of the cost in cash and borrowing 1.5 mn Mt (\$50,000) from a bank.

Alberto Muchenguete was part of a government survey team in the colonial era who came to Lioma when it was being laid out for Portuguese peasants in the early 1970s, and later worked for the state farm that took the land when the settlers left at independence. He was one of the biggest farmers of the 2010/11 season, producing 24 tonnes of soya from 20 hectares. Clusa provided substantial support, including ploughing and helping to arrange a loan from Banco Terra. After he repaid his loan, he invested the remaining profits in his houses and in "buying" land in his home area in Manica. So a 2011/12 crop was totally dependent on credit.

Clusa helped a group of 13 emergent farmers to negotiate a two-year loan of 1.8 mn Mt (\$60,000) for working capital from the District Development Fund (FDD, the "7 million"). But the 3-way negotiations and Clusa and state bureaucracies were complex and the contract was only signed in February this year and money disbursed from 30 April. But soya had to be planted in December. For Muchenguete this created problems. Clusa ploughed 20 ha on credit, and Muchenguete hired more than 100 people to level the land and plant – in early January, already 3 weeks late. Weeding started, but he ran out of money after 12 ha had been weeded – despite his substantial income the previous year. The loan money arrived just in time to hire workers for the harvest and to rent a thresher, but late planting and late weeding left him with only 9 tonnes of soya and no profit.

Muchenguete is a good soya farmer, but unlike Katxava he is not yet reinvesting or diversifying, and remains totally dependent on credit. Several people we interviewed told us "credit is a trap." But will more people invest profits in their own working capital?

Development of small scale commercial or emergent farmers is central of the soya model. This, we noted earlier, requires changed thinking by the farmer, including the ability to plan and save, calculate profit and loss, increase production areas, hire labour, and invest. These changes do not happen quickly. Some people with formal employment experience can move more rapidly, but for most of even the larger and more successful farmers this is a long and slow process, requiring repeated farm visits and discussions over several years. Two agencies told us that they had tried to gain support for programmes to help small groups of emergent farmers for an extended period, but donors refused. One said: "we picked 10 farmers in Gúruè with more than 6 hectares and wanted to work with them for 5-10 years, but the donor wanted 10 different farmers each year for five years. Donors want big numbers, but it is useless to give just one season of support."

Hoyo Hoyo and local conflicts

The first and largest land holder in soya is Hoyo Hoyo in Ruace, Gúruè, which is owned by Quifel which is controlled by Miguel Pais do Amaral, a Portuguese aristocrat and racing car driver. Quifel also owns LeYa which in turn owns two of the most important publishers in Mozambique, Texto Editores and Ndjira. In December 2009 the Council of Ministers granted Quifel 10,000 ha of the former Lioma state farm.

The project was controversial from the first. [Two paragraphs of this article cannot be included in this version, because it is being distributed on an Open University list serve. See Appendix 2.] Antonio Botelho, general manager in Mozambique, added: "the original plan was paper – unrealistic."

Perhaps because of this, the project did not attract sufficient investment funds and so little was done in the first two years – the period in which Mozambican law demands substantial progress on the plan on which the land concession is based. The law also requires that a formal demarcation of the land, with marker posts, be done within a year – in this case by December 2010 – but Rui Laurentino, CEO of Quifel Natural Resources, admits it still has not been completed.

The area has been badly affected by the 1982-92 war; the state farm was abandoned due to Renamo attacks in 1986 and most people fled. By the end of the war the state farm was heavily overgrown, but people returned and began to clear the land. By 2008 many had occupied the area in good faith for over a decade, which under Mozambican law gives them squatters rights. Clusa supported an association of 8 soya producers on 40 ha in a corner of the old state farm. Quifel was given the land by the Council of Ministers despite the rights of the occupants, but did nothing. For the 2010/11 season, Clusa had ploughed 300 ha on the old state farm, in part with funding from the Bill & Melinda Gates Foundation. Suddenly in December Quifel rushed to clear at least some land, re-ploughing 100 ha already ploughed by Clusa and destroying soya plants that were already sprouting. Very little was actually planted by Quifel, however.

Laurentino explained: "We started closest to the road. The people had also started closest to the road, but we were not going to open a road to the interior of our concession," so they used the same land. He knew it was cleared land, "but we did not come here to clear virgin land".

Tension with the community has increased. But Laurentino stressed: "We don't meet with the community. Let us be clear – we meet with the government." He continues: "I am here to be a farmer. ... We don't go to Ruace and have a gathering of people. We interact with government".

This year Hoyo Hoyo has hired and trained local workers, and is constructing its initial building using local material. However, government is increasing the pressure on Hoyo Hoyo to do the demarcation, resolve resettlement, and start production. Hoyo Hoyo says it wants to plant 3500 ha in the coming season, but still has only 7 tractors. Botelho says they will work three shifts, 24 hours a day.

But the real crisis is over resettlement. The community has always claimed that much of the state farm is being used by local people – their houses are outside the old farm but their plots are inside. Initially some people were simply forced off the land, and resistance and discontent increased. People said they were prepared to move, but only if new land is ploughed for their first

season. Hoyo Hoyo agreed, and nearby land was allocated for resettlement, but it must be cleared of trees and no land preparation was done.

Hoyo Hoyo was finally forced in July to do a full survey with the community and GPS mapping of the 3500 ha the company says it wants to use in the coming season. The survey identified 836 farmers with 1945 ha. Clearing the resettlement land of trees has only just started. The district administrator has backed the community, and at a public meeting two months ago said that no one had to move until they were given an alternative plot where the land had been prepared.

It seems highly unlikely that Hoyo Hoyo can move a significant number of people and clear a large tract of its own land before the mid-December planting deadline.

4 other large companies

Three other large companies are active in soya in Gúruè district, and unlike Hoyo Hoyo, have built a good reputation with local communities. A fourth company is just starting.

AFRICAN CENTURY AGRICULTURE (ACA, FORMERLY GETT). Set up to supply soya as feed for King Frango, one of the largest poultry producers in Nampula, the company (then called GETT) was bought last year by African Century, an investment company registered in Mauritius and based in London. African Century Agriculture (ACA) is the largest contract farming company in Gúruè, and is initially supported by Swiss aid through InovAgro, in a three year contract. Half of the machinery is owned by InovAgro and half by ACA. In the first year, the Swiss pay 70% of running costs, 50% in the second year, and 30% the third year, with the rest covered by ACA. 2011/12 was the first year, and they had 844 contract farmers on 1250 ha. They did mechanical preparation of 350 ha. They argued that because soya planting is very shallow, it is not necessary to plough, so they only used a disk harrow, and then mechanical planters. Zimbabwean seed was imported and inoculants used. Those who did not have mechanical land preparation were given seed and inoculant, and opened land by hand. Half had credit from a microfinance bank backed by the Swiss, and half had ACA credit. ACA had intended to provide threshing, but their machinery arrived late and many farmers threshed manually and sold to other buyers. About 60% of the credit has been repaid. Only 17% of farmers have repaid their loans in full; 38% paid under a quarter, including some paying nothing at all.

ACA accepts some of the responsibility for the side-selling and non-repayment because of the late arrival of threshers, and has offered that all farmers can continue in the 2012/13 season, as long as they sign a letter accepted that they have a debt to ACA. Mechanical land preparation and seeding will be limited to farms of over 2.5 ha, with just seed and inoculant provided to small farmers, but an attempt will be made to arrange credit to cover *ganho ganho* costs. They hope to do 1500 ha in the coming season. ACA has 1000 ha of its own, but does not expect to farm it until the 2013/14 season. "We will always focus on outgrowers," explains ACA head Rachel Grobbelaar, "but our own land gives us a guaranteed crop."

Production averaged 1.5t/ha, with a few farmers reaching 2 t/ha, in the 2011/12 season. Costs to ACA mechanised farmers were about 7300 Mt/ha, plus *ganho ganho* payments for weeding and harvesting, pushing the total cost to 8,500-10,000 Mt/ha, giving an average profit of 14,000 Mt/ha (\$500).

REI DO AGRO. A US investment company whose only other experience is in the Ukraine, it has hired Zimbabwean management for a project that mixes own production and outgrowers. On the edge of Gúruè district, it has 2,500 ha of dense bush which has been little used since the war and must be cleared. Like Hoyo Hoyo, it initially failed to attract sufficient investors so started slowly, although it has now invested \$5 million. But it moved to clear land and produce as quickly as possible. 2011/12 was its second season and it grew soya on 160 ha. It hopes to plant 600-1000 ha in the coming season, and now has enough machinery.

The long term plan is that most soya will come from their own production, and the rest from outgrowers. Chishamiso Mawoyo of Rei de Agro says "we have to move away from the old model having your own farm which is large and exclusive, to move to smaller farms that are inclusive of the community." 2011/12 was their first outgrower season with 30 farmers on 180 ha; they had come from Clusa, had 4 to 8 ha, and were known to be good farmers. Seed and land preparation

was done by Rei do Agro on credit; 90% has been repaid. They aim for 50 outgrowers on 300 ha in 2011/12, and hope to expand to at least 500 ha of outgrower farms. Mawoyo explains: "we are being selective about outgrowers. We want a small number of commercial farmers with yields and areas increasing."

When President Armando Guebuza visited Lioma on 24 April 2012, he visited Rei do Agro but not Hoyo Hoyo.

ALIF QUIMICA. A Mozambican company which recently re-asserted control of company land abandoned during the war. The land was occupied by farmers after the end of the war in 1992. Rather than contest that occupation, it has set up a contract farming system with the people on its former land, providing ploughing and seed for both soya and sunflower. In addition, it is reported to have allowed some other farmers to enter the land on a sharecropping basis. In the 2011/12 season it had 155 farmers on 300 ha.

AGROMOZ – AGRIBUSINESS DE MOÇAMBIQUE. The newest entrant was only formally announced on 6 September 2012, Agromoz is owned by Grupos Américo Amorin of Portugal (which owns Banco Unico in Mozambique), Pinesso (a major Brazilian soya producer), and Intelec Holdings (a Mozambican company part owned by President Armando Guebuza). It is believed to have been given part of the former state farm in Lioma to grow soya, but no details are available.

Is soya a one-off, or a development model?

Soya is seen as a success story – a profitable small holder crop which is taking off rapidly. In the areas suitable for soya, substantial increases in production are possible. But this is only a small part of rural Mozambique. Can this experience be replicated with other crops in other places, or is it specific to soya?

At the beginning of this paper we characterised the soya model by:

1. Focus on a single crop.
2. There is an assured market. The crop has high demand and high profit.
3. The crop is suitable for some level of mechanisation and thus is appropriate for small commercial farmers with 4-20 hectares.
4. A technology and support package was provided for a decade by the international public sector.
5. Support involves more than just advice and facilitation, and includes concrete support with seeds, ploughing and marketing.
6. Only after the package is proven to be profitable is it slowly taken over by the private sector, through approaches such as contract farming which are often initially public-private partnerships.

Key to the soya model is that the technology and support package is long term and "hands on". First the Brazilians and then World Vision introduced soya to Lioma, but it was not widely taken up until the Norwegian-funded Clusa/TechnoServe support programme, which involved people literally getting their hands dirty – supplying tractors and ploughing, organising seed production, promoting marketing, and training people to see farming as a business. One interviewee commented: "World Vision introduced a technology – a crop – but they did not promote or expand it. Clusa promoted a business, not a crop."

Only seven years after Clusa entered, contract companies began taking over the promotion of the crop, but often in partnership with NGOs and not yet on their own. Increasingly, we see donors saying they want to "facilitate" – building links between farmers and producers, associations, etc. But even now, soya needs muddy boots in fields and not "facilitation".

It is worth comparing soya to other two crops which have been successfully promoted. Soya is only the third crop to have extensive contract farming in Mozambique, following cotton and tobacco. Tobacco has been promoted largely by a single multinational company, and has so far done the most to reduce rural poverty. It fits a pattern of a guaranteed market with a technology package from outside. Public sector involvement has been to give one tobacco company monopoly access.

Cashew has been revitalised over a decade with a government-donor-private sector partnership which put emphasis on the value chain and developing the local market by introducing

new technologies and new factories. Public sector support was essential until it was shown to the private sector that cashew processing could be profitable; the state is still involved providing tree seedlings and spraying.

Thus cashew and tobacco share most, but not all, of the characteristics of soya. One key difference is that soya has small, medium and very large producers, and is built around the promotion of small commercial or emergent farmers, whereas cashew and tobacco are produced only by the smaller farmers. A second difference is that soya contract companies and the aid sector provide more support, sometimes including ploughing and other machinery support.

So, can the soya model be replicated elsewhere? Not exactly. Soya is a specific crop and the conditions are particularly propitious. But in a broader sense, the thinking behind the soya model has much wider implications. Choosing a single crop, making it profitable and ensuring a market, providing the technological and support package over a decade, and building up small commercial farmers looks possible in a number of other areas. This will always be a public-private partnership, with the public part coming first and the global public sector doing the heavy lifting; the private side slowly takes over only when it becomes profitable.

Four field crops immediately come to mind as candidates for the soya model. Each is different and will require a different technology and market package. Maize and rice have low prices and would need production to be raised from the current 1 tonne per hectare to at least 3 t/ha if they are to be profitable. This is a larger jump than has been made with any other crop, and requires new systems with improved seed, fertiliser, and better techniques, but the technologies are already available in other countries. At 3-4 t/ha, maize and irrigated rice (especially if two crops a year could be grown) would be attractive to larger farmers, and the soya model could work. These are staple crops with highly variable world prices, and last week FAO Director General José Graziano da Silva called on all countries to increase their grain reserves. This would help to stabilise domestic prices and also guarantee the market for producers. A third possible crop is groundnut, which has a market in South Africa and is suitable for medium and emergent farmers and mechanisation. Groundnuts needs a much greater degree of quality control than at present. With the right technology package, the soya model could work. Sunflower also has potential.

The soya model could be used with other crops and in other parts of the country, probably with the same dramatic results as seen by soya. But it will not be cheap, and will require a commitment to a decade of Mozambican and international public sector support.

Appendix 1: Soya production

Luis Pereira, Director Programas Agrícolas of TechnoServe, estimates that there are 26,750 soya farmers, with 29,850 ha, who produced 31.500 tonnes in 2011/12, with a farm gate value of 472 mn Mt (\$17.5 mn). Production has increased five-fold in just three years, he reports.

Production is primarily in Angonia in Tete and Alto Molocue, Gúruè, Milange, and Namarroi districts of Zambezia. Smaller amounts are produced in Nampula, Niassa, and Manica provinces.

Appendix 2: The Open University and Hoyo Hoyo

Joseph Hanlon is visiting senior research fellow at the Development Policy and Practice centre of the Open University (OU), Milton Keynes, England. His Mozambique website <http://www.open.ac.uk/technology/mozambique/> is hosted by the OU and his newsletters are distributed on a OU list-serve. Agents for Quifel, the owners of Hoyo Hoyo, threatened legal action against Joseph Hanlon and the Open University in 2011. The OU agreed that certain material relating to Hoyo Hoyo would not be published in anything connected to the OU, and that the OU would not provide hyperlinks to anything on the web containing that material. The OU legal services department stressed their goal was "to avert the threat of legal proceedings," However, the UK National Union of Journalists provided legal support for Joseph Hanlon. Their goal was to support academic and media freedom. Lawyers challenged the basis on which legal action was threatened, and the agents for Quifel did not pursue their threatened action. That leads to a highly unusual position that this material can now be published anywhere except at the Open University. A paper for a World Bank conference earlier this year, posted on a World Bank website, cannot be hyperlinked from the OU because it uses some of this material.

This version of the paper has two paragraphs deleted, because they use some of this material. If you contact Antonio Johala, who is not connected to the Open University, he can provide a link to the full paper: antonio.johala@gmail.com.

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