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**Rapid Reconnaissance of Coarse Grain Production and Marketing in the CMDT
zone of southern Mali: field work report of the IER-CSA-PROMISAM team
December 13 – 19, 2009**

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This report presents principal findings of a rapid reconnaissance undertaken in December, 2009 as preparation for more detailed marketing studies to be undertaken in the context of PROMISAM II's applied research program on promoting food security in Mali. The objective of the reconnaissance was to explore changes in cereal production and marketing patterns as an input to the design of a forthcoming study of changes in the structure, conduct and performance of the coarse grain sector in Mali. To facilitate discussions with farmers and traders an interview guide was prepared. The first section of this report synthesizes the principal findings, while the annex presents detailed field notes from the study together with the interview guide.

The rapid reconnaissance team was composed of Dr Amadou Samaké, Head of the ECOFIL Department of IER, Mr Tagalfi Maiga, Economist with the CSA, Dr Nango Dembélé, MSU Country Representative, and Dr Duncan Boughton, MSU FSIII Co-Director.

Synthesis of key findings and policy implications

The southern region of Mali is in a process of transition from a cotton-cereal production system, where the cotton subsector facilitates access to fertilizer for cereals as well as cotton, to a cereal-based production system. The economic and financial viability of this evolving cereal-based system will depend on its ability to integrate, through market-based institutions, cost effective fertilizer access, access to technology for sustainable high crop yields, drought and associated financial risk management tools, and farmer cereal marketing strategies. In the absence of the CMDT, farmers will need to be able to take financial responsibility for their cereal production and marketing businesses, and have access to institutional innovations that enable them to manage financial risk. Even in the event of a successful privatization of the CMDT in the southern region farmers will need access to financial services that enable them to manage their farms as autonomous businesses since a private cotton company will not be able to support the cost of these services.

The successful emergence of a commercial smallholder cereal production system in the southern region is also crucial to Mali's food security strategy because the region supplies much of the cereal requirement of Bamako, Mopti, Gao and the northern regions. Thus investments in the southern region are strategically important for national food security and political stability. The emergence of a viable cereal-based production system is also crucial for the development of the poultry industry in Bamako and other urban centers to ensure urban consumer access to protein at reasonable costs.

A successful transition depends not only on the emergence of strong domestic institutions but also dynamic regional markets. If Mali is to achieve and maintain its potential cereal production levels then regional markets are essential to absorb surplus production and avoid price collapses that undermine the profitability of improved technology use. The current practice of hindering exports through bureaucratic tactics gives Mali a bad reputation as a reliable source of cereals and creates incentives for rent seeking behavior by border officials. Currently estimated at 10 CFA per kg of grain crossing the border, these illegal taxes are the equivalent in cost to one 50kg bag of fertilizer at commercial prices for every hectare of maize exported. Export restrictions that reduce the farm-gate price and profitability of cereal production serve to perpetuate the need and/or amount of fertilizer subsidies while transferring rents to corrupt officials.

The team confirmed that there have been many changes in the cereal production and marketing system over the past twenty years. The number of cereal traders has increased dramatically. The introduction of mobile phones, the improvement in transportation infrastructure, and improvements in the banking system, have all led to a much more competitive internal market with higher volumes and lower margins. Farmers also have a much higher awareness of cereal price movements and the advantages of stocking cereals until price levels are favorable. The extent to which farmer marketing strategies are affected by distance from the main road needs further study. New varieties of maize appear to have met with widespread appeal among farmers although the extent of adoption is not documented. Mechanized threshing of cereals has also become a widespread practice (non-existent 20 years ago) and results in cleaner grain than manual or animal powered threshing.

The decline of cotton over the past decade has created a new dynamic for cereal production and marketing. The problems of cotton are multiple in nature, and not primarily due to the cotton price. The most significant problem is the very late payment for cotton by the CMDT, sometimes occurring only after the next season's crops have been planted. But there are also technical problems. The new cotton varieties do not yield as well from the farmers' perspective (raw cotton yield per hectare), new pesticide regimes are less effective, and sustained cotton monoculture appears to have had serious effects on soil fertility. Many farmers have abandoned cotton altogether in favor of cereal production, and those who remain in cotton are often poorer farmers who don't have cash or access to credit for fertilizer except through cotton.

While millet demand remains strong, demand for maize is rapidly increasing for poultry production. Analysis is needed to ascertain the competitiveness of Malian maize on regional markets under different international maize and fertilizer price scenarios.

This season the availability of cereal on the market, particularly maize, is limited and prices are high for the time of year. This appears to be due to a combination of factors: re-stocking at farm level after last year's relatively poor harvest, a late start to the most recent cropping season, and heavy late season rains that damaged crops that had been harvested but not yet transported to the households.

Ironically, rice farmers in the Office du Niger face some of the greatest challenges in achieving food security because of the very small areas of irrigated land available in relation to family size. The financial viability of the system under strong demographic pressure requires highly disciplined cooperative management. In addition to addressing the demographic pressure through re-allocation or re-settlement (implying the need for more flexible land markets), a number of technical options could be explored to improve the viability of the rice based system, including the integration of livestock fattening or intensive fish farming. A starting point would be to see whether any feasibility studies for complementary economic activities have already been undertaken.

Key potential policy recommendations emanating from the reconnaissance include:

- 1) Development of institutional innovations to ensure physical and financial fertilizer access for farmers, together with extension advice, independent of the cotton subsector;
- 2) Removal of export restrictions and a campaign to eliminate associated rent-seeking behavior by border officials;
- 3) Adequate credit access for traders to be able to expand temporal arbitrage and reduce seasonal price fluctuations;
- 4) Medium-term credit for animal traction and equipment purchases by farmers;
- 5) Options for re-settlement of farmers in the Office du Niger through more flexible land markets and/or access to newly developed areas.

Annex: Details of field interviews

Interview with farmers in Woroni village, Sikasso

On December 14, 2009 the team interviewed a group of approximately 20 household heads in the village of Woroni, about 12km from Loulouni on the main road half way between Sikasso and the border with Ivory Coast. This Senofou village is comprised of about 150 families and has a school. The team was accompanied by the local representative of the Observatoire des Marchés Agricoles (OMA).

Maize is the most important crop in terms of area, followed by millet. The area of both crops has increased in recent years while that planted to cotton, the third most important crop in area terms has declined. Maize is the most profitable crop because of high yields and the fact that it serves as both a food and cash crop. Millet is less profitable than maize despite a higher price. The large grain size of the local millet variety is preferred by consumers in Bamako and Ivory Coast, but has the disadvantage of being a long-cycle variety (four months). Cotton has been declining in area because of low prices and the fact that the CMDT pays for the crop only after a long delay (six months or more). The village cotton producers' association used to have more than a hundred members but now has only 30. Cassava, Irish potato, lowland rice and upland rice (Nerica – New Rice for Africa) are also cultivated in the village, but Nerica has been badly attacked by termites at the seedling stage.

Maize is currently selling for 75 – 80 CFA/kg but generally increases to between 125 and 150 CFA/kg during the hungry season. Millet is currently selling for 100 CFA/kg but generally increases to between 175 and 200 CFA/kg during the hungry season. Farmers prefer to sell the majority of their marketed production at the beginning of the rainy season, around May/June, at which point they know how much surplus they have to sell. The proceeds are used to buy fertilizer. To meet financial needs between harvest time and May/June farmers sell cassava and Irish potato. Farmers who don't have access to appropriate land for cassava and Irish potato may have to sell cereals earlier at less advantageous prices to buy clothing and other necessities for the family in order to encourage younger family members to stay rather than migrating out of the village.

There is a lot of variation among households in terms of the quantity of cereals sold. Between one third and 40% of households will sell more than one ton of grain in a normal year. The main factor distinguishing farmers who have large quantities to sell is the amount of land cultivated, which in turn depends on animal traction equipment capacity. Unequipped households find themselves in a trap. They need a high level of production to be able to pay for equipment but they need equipment to be able to achieve a high level of production. This is a trap that cotton helped farmers to escape in the past when international cotton prices were high. Additional land is still available for cultivation if households could obtain equipment.

Cotton used to make a positive contribution to food security in the past, through access to fertilizer on credit, when prices were higher and farmers were paid on time. But with low

yields and late payment farmers ended up subsidizing cotton production from their millet production. Now, with farmers abandoning cotton and focusing on cereal production, food security has improved over the last ten years. Less than 5% of households in the village are food deficit and this is usually the result of poor stock management (selling too much). If farmers need food they prefer to buy from other farmers in the village rather than from a cereal bank because of confidentiality and the possibility of obtaining on credit. The main period for purchases is during the *soudure*. There is a cereal bank in Loulouni but farmers have no experience with buying from or selling to it.

The main sources of non-farm income for households are remittances from family members with jobs elsewhere. For women the main sources of farm and non farm income are rice production, beurre de karité, and néré (spices collected for making sauce).

Most grain is sold to local buyers in the village who are purchasing on behalf of wholesalers in Sikasso. Some household members from the village will undertake this activity. When a local buyer has assembled enough produce, then the trader sends a truck to collect it. Farmers sell individually. They don't organize themselves to sell a large quantity at once because they want to sell different amounts at different times and they don't see any price advantage for selling in a large quantity. If a trader in Sikasso provided them with a contract before the cropping season then they would have an incentive to work together to assemble the required quantity. Farmers buy their own sacks and traders either transfer the grain into their own sacks at time of purchase, or they pay the farmer for the sack, or the price of the sack may be "included" in the grain price. Farmers receive price information by radio or television, or by asking when they visit towns, and the information is useful when they negotiate with buyers.

Grain is clean in this village because they use mechanical threshers on a fee for service basis. One owner is resident in the village and others come from Sikasso. The price is 1250 CFA/100kg for millet and 750 CFA/100kg for maize. If farmers don't want to pay in cash they can pay in kind (10% of the processed grain).

The main constraint for cereal production is soil fertility. Soil fertility is declining and farmers can't afford to buy all the fertilizer they would like to, even at subsidized prices, because of cash constraints. Organic manure is only sufficient for a small part of the area and not all farmers have animals. Striga has become a serious problem, especially over the past ten years, and there is no longer enough land to solve the problem by long-term fallowing. Farmers believe chemical fertilizer can address the striga problem if applied in high enough doses. They also think Tilemsi Rock Phosphate is effective. The BNDA initially said they would provide credit for fertilizer purchase if farmers organized themselves and set up group savings, but subsequently they were unable to honor the commitment.

Farmers estimate that a maize price of 125 CFA/kg is necessary to make a profit when obtaining an "average" yield from a "normal" fertilizer application level at subsidized

fertilizer prices (250 CFA/kg for complex or urea, about 60% of the commercial price), but if the yield is high then you can make a profit even at a maize price of 65 CFA/kg.

The critical factor affecting the sustainability of this cereal-based farming system in a favorable agro-ecological zone will be soil fertility management, and the ability to access and profitably apply chemical fertilizer in combination with other soil fertility measures. At the present time improvements in fertilizer market access are even more critical than cereal market access.

Interview with traders' association in Sikasso

On December 15th we met with four officers and one member of the association "Acheteurs des Produits Locaux de Sikasso". The association was formed in 1989 but commercial activities only got underway in 1996 after all official papers were finalized. At its peak the association had 36 members but now has 25 because of deaths and discontinuation. Some members have their own transport and warehouses while other rent. The association has purchased land for warehouse construction.

The traders explained that the main difference between them and their counterparts in Burkina Faso is that the latter have much greater access to bank credit to purchase and stock large quantities of grain. In a context of free regional trade in cereals the degree of access to and cost of credit for temporal arbitrage can convey strategic competitive advantage. In the absence of this facility Malian traders effectively become simple buyers for regional traders. In the past (20 years ago) credit was made available for cereal marketing but it didn't go to bona fide traders. Consequently much of the credit was diverted for other purposes, and not repaid. Today it is necessary to assemble a certified track record in trading volume and loan repayment to obtain a commercial loan, but even then the amount of the loan is limited. Nevertheless all the Koutiala traders aim to stock cereals for sale during the *soudure* to the extent that their financial resources allow.

The number of formal sector cereal traders in Koutiala has increased greatly over the past 20 years. Compared to approximately ten male traders in 1989 there are 60 today. There is only one formal woman trader among the sixty, as women tend to engage primarily in informal sector cereal trading.

Maize, sorghum, millet and rice are the main cereals traded. Maize accounts for about 80% of the coarse grain portfolio. The main domestic markets are Bamako and Kayes, although a lot of produce sold there is for transshipment to regional destinations (approximately 60% of maize traded in Koutiala is for export). The main regional destinations for maize are Senegal, Niger, Mauritania and Guinea. Burkina Faso is a transit destination for Niger.

Maize is considered by the traders in Sikasso to be a crop with a future. Demand is strong with intense competition among traders to obtain farmers' produce. They expect

regional and domestic demand to increase because of increasing demand for livestock feed, and improvements in regional road networks to reduce marketing costs.

Other than timely access to and cost of credit for cereal purchases the main constraint faced by traders is illegal rent seeking behavior (*tracasseries*) at border crossings. This problem has increased since 2004/5 because of export restrictions, with customs, transport police and regular police all collaborating. Traders have to pay approximately 10 CFA per kg of grain to avoid hold up costs at the border (associated with the costs of transport rental). These bribes are the equivalent in cost to a 50 kg sack of fertilizer at commercial prices per hectare of intensive maize production exported, or equivalent to the cost to government of subsidizing 2 bags of fertilizer at the current subsidy rate. It is ironic that government policy, by restricting cereal exports in an attempt to ensure that Malian consumers benefit from the fertilizer subsidy through lower domestic prices, appears to end up instead making the prime beneficiaries a relatively small number of corrupt officials.

The demise of the cotton sector has led to a bifurcation in cereal marketing strategies among farmers. In the absence of significant cash inflows from cotton small farmers tend to sell in small quantities to avoid dissipation of cash resources. This makes assembly more difficult and more costly for traders. Larger farmers want to hold their stocks off the market to sell at higher prices. There is also an increasing trend toward purchasing and stocking of maize by village associations (AVs). AVs are the main source of competition with trader-financed buying agents. The growing involvement of AV in cereal purchase and storage is a recent phenomenon linked to the cotton crisis and the need to maximize returns to investment in fertilizer. In response to a question about traders making forward contracts with AVs the traders stated that they know the AV officials and have been involved in discussions with AFD on supplying inputs on seasonal credit to AVs. The difficulty is to agree on a price that both parties will adhere to. Also, members of the AV often have difficulties in reaching agreement amongst themselves due to differing needs.

We discussed the impact of cereal banks on traders' business strategies. They do not have any impact on trader strategies in Sikasso and could potentially be useful to some farmers in remote areas during the soudure. This is because traders do not sell to remote rural areas during the rainy season because they cannot afford the risk of their trucks getting stuck for several days. But farmers are ashamed to buy cereals from the Cereal Banks as it becomes public knowledge that they without food, so traders often end up buying the cereal bank stocks anyway. The traders think that in principle Cereal Banks can be a good idea if well managed. But in the case of Sikasso, where there was an efficient management committee, the Mayor replaced the committee by fiat without an election!

Courtesy visit to CRRRA Sikasso (IER) – December 15

Head of the cotton programme agreed that Bt cotton should be tested in Mali. Unfortunately the regional cotton network under CORAF is not functioning due to lack of funding, so regional exchanges with Burkina have not been possible.

Courtesy visit to SAP Sikasso – December 15, 2009

SAP maintains 9 sentinel villages (“villages phares”) with ten ménages and 150 children monitored in each village. Qualitative assessments of food availability and coping mechanisms (temporary outmigration, asset sales) are undertaken monthly. If these indicators show that a crisis is impending then quantitative data will be collected to provide more precise information on food aid intervention needs.

Courtesy visit to DNSI Sikasso – December 15, 2009

Regional Director Kone was involved in an earlier consumption study but the questionnaire is on his computer which is broken – needs a new screen.

Discussion with Daouda Dembele, technical assistant to the Cooperative des Exploitants Motorisés de Kanico (CEMK) – December 15, 2009

The CEMP is a farmer cooperative which has hired their own technical assistant, Daouda Dembele (a graduate of IPR Katibougou), to advise them and facilitate input and output marketing. The organization has approximately 100 members who pay 25,000 CFA per year in dues. Members obtained loans to import 20 second hand tractors from France. The loan terms involve a deposit of 25% of the loan value as a guarantee, 10% interest and a 1% service fee. This was supposed to be the first of a number of shipments but member were faced with an unexpected import duty of 100% of the purchase price on arrival (the farmers did not obtain the necessary exemption certificate prior to arrival). This has delayed full repayment of the loans and the planned importation of a subsequent lot. Tractor owners provide ploughing services for other members at 20,000 CFA per hectare (25,000 CFA for non-members). They also provide threshing services over a large geographical area. Tractor repayments vary between 1 and 2 million CFA per year depending on the purchase cost of the tractor. Last year the CEMP sold 120 tons of grain on behalf of members at a price of 135 CFA/kg for maize and 155 CFA/kg for millet, retaining a 5 CFA/kg commission. Members have experimented with zero tillage but have not yet found an effective mechanical planter.

Interview with farmers in Kanico village, Koutiala – December 16, 2009

Accompanied by Daouda Dembele the team visited with a dozen household heads in the village of Kanico, about 10 km from Koutiala.

Historically maize production was linked to cotton because of the need for fertilizer, and access to fertilizer is main factor limiting maize production. After almost abandoning cotton completely 3 years ago a few farmers have started to cultivate cotton again. But cotton yields now average only about 1 ton/ha compared to 2 tons/ha in the past. The main reasons given for this fall in yields are 1) the introduction of a new variety, STAM 49, in place of ISA 205; 2) decrease in insecticide effectiveness due to changes in concentration; and 3) soil impoverishment as a result of cotton monoculture. The main problem with the new variety is that it does not produce enough cotton capsules, with capsule formation stopping after the second pesticide application, The variety is also lighter in weight (lower grain/fiber is more profitable for ginning but not for farmers to produce when paid by raw cotton weight). In regard to soil fertility, the use of organic fertilizer is not sufficient to resolve the problem. Also, the fertilizer provided this year by the private fertilizer distributor "Nyumani" was lower in quality than previous years. Compounding all these constraints to cotton profitability is late payment by the CMDT. Farmers were only paid in September 2009 for the 2008/9 crop.

Maize is the most profitable crop, followed by millet and then cotton. Sorghum could be profitable but has succumbed to devastating attacks by sucking pests that attack the leaves and stalks. Hence farmers are nervous about cultivating sorghum, although they are experimenting with a new variety (see below). The main constraint to fertilizer use on maize is crop losses due to weather risks. In the past the CMDT and BNDA provided some risk sharing in regard to weather problems but now farmers are on their own. There are two main varieties of maize. Sotuba-ka has been grown for more than 10 years. It is a 110 day variety with high yield (heavy grain) and good taste and storage characteristics. "Dembanyuma" is a shorter cycle variety (90 days), white in color, with an equally good taste. Farmers recommend a 3-year seed replacement schedule to avoid genetic degradation, but they do not have a system in place to accomplish this.

Maize is grown for sale either in fresh form during the *soudure* or as grain, whereas millet is grown for own consumption. Farmers would prefer to hold maize for sale in May/June when prices are higher, but sometimes they have to sell early to pay harvest expenses for other crops, especially now that they are paid late for cotton. Farmers mainly sell to buyers (*collecteurs*) based in the village or who come from Koutiala (there is a 10 – 20 CFA price difference between Koutiala and the village). Before selling to traders they will inform other villagers of their intentions in case there are any deficit households in the village who would prefer to buy their grain instead of going into town to buy. Price information is obtained from the radio or television. The information is useful because it indicates price trends as well as prices in different parts of the country. They do not have information about transport costs, however. Farmers prefer to use their own sacks when selling so that the negotiation of grain prices is not confounded by the question of ownership of sacks.

Although sorghum has suffered from insect pest attacks a new variety, called Grinkan, shows promise. Grinkan is an ICRISAT variety that has been promoted by a local NGO called AMED. Approximately 100 farmers have an average of one hectare each under cultivation. This long-cycle (110 – 120 day) variety can yield 2 tons/ha on average. The short height of this variety makes it easier to manage and the animals like to eat the thick-stemmed straw. It is a cross, selected by farmers themselves from a variety trial, between a tall, white-grained local variety and an improved variety half the height of the local. Farmers sell the Grinkan variety because it does not make a good toh (poor consistency, taste and keeping quality) and is susceptible to storage pests. The farmers sell just before the hungry season through the Cooperative to a large trader in Koutiala who sends a truck to collect the crop.

The number of food deficit households has more than doubled over the past ten years. Whereas only 10 – 15 households out of 128 in the village would be food deficit in a typical year, now there are more than 30. The increase reflects the decline in cotton and associated loss of access to fertilizer, as well as changes in rainfall patterns (in particular a late start to the rains). As a whole the village is not food deficit because about 40 households have a surplus of one ton or more of cereal to sell. Deficit households generally make plans in June/July to buy from surplus households or borrow in return for labor. No one from the village uses the commune cereal bank because farmers have to pay cash. Nevertheless, the commune cereal bank chose to sell its 5 ton allocation of rice to local government workers on credit because they could guarantee repayment from salaries.

The farmers see the potential advantages of cereal banks as proximity and reducing price fluctuations. But the disadvantages are many. The stock is small relative to the population, cash for re-stocking is often available late, storage infrastructure may be inadequate, interest rates are high, and the administration (management) is very heavy. Farmers claim that non-farm income earning opportunities are rare. For men these include commerce, remittances from migration, renting out services (e.g., tractors) and labor. Women's activities include soap making, dying, petty trade, processing (karité, néré, soja). To date these activities do not appear to have been adequately captured by our survey instrument (administered to the household head) and we will probably need a dedicated survey administered to individual family members to really get a good handle on the magnitude of non-farm income.

Interview with traders in Koutiala – December 17, 2009

We met with three Koutiala wholesalers with 17, 21 and 28 years experience. Two owned their own transport. The number of traders has increased greatly over the past 10 - 20 years. Twenty years ago there were less than 20 traders (4 women) and engaged in cereal trading, and this was only one of their activities since it was not viewed as a respectable business at the time. Today there are more than 100 licensed traders, although none are women. Some civil servants also engage in temporal arbitrage. These days traders need much greater availability of capital because trading margins are low.

Twenty years ago sorghum was the principal cereal traded, but recently millet and maize have become increasingly important due to strong demand. The main domestic markets are Bamako (which is also a transshipment point for maize to Dakar), Mopti (millet), Gao (millet) and Kayes (sorghum). Regional markets include Abidjan (millet) and Niger. The areas where they purchase from include the cercles of M'Pessoba, Koutiala, Yorosso, Bla and San. Margins on exported grains are higher than for the domestic market as traders in major domestic markets have more options for obtaining supplies than traders from Niger or Cote d'Ivoire who come to Koutiala.

A major change in recent years is that their clients come directly from the major consumption centers to buy. In the past Koutiala traders used to rely on representatives in the destination markets but this is no longer the case. Traders even come to Koutiala from Ivory Coast to buy cereals. This change reflects the fact that demand is growing faster than supply, combined with improvements in transportation infrastructure and communication (cell phone).

The decline of the cotton sector has resulted in a decline in the marketed supply of cereals in the Koutiala zone due to the reduction in access to fertilizer. They used to have farmers who sold up to 30 tons but now the maximum available from an individual farmer would be 10 tons, and even then only from someone taking grain in exchange for threshing services or someone acting as a local buyer. The biggest problem with the CMDT is the late payment for cotton.

The traders do not focus on long-term storage but just short-term storage in anticipation of an order. Longer-term storage is often practiced by larger retail shopowners. The most important source of market price information is via cell phone, either clients or partners. Cell phones have greatly increased information flow and brought about lower price margins. The frequency of calls is indicative of price trends. Regional price information is available from MISTOWA and quantities available communicated over the net. There is no information that they need but do not have access to. Improvements in the efficiency of inter-bank transfers have also helped business.

According to the traders' association, access to bank credit is a problem as you need collateral either in the form of a contract (e.g., with OPAM) or else land title. Otherwise the credit application has to go to Bamako for review and decision which is time consuming. In Burkina Faso, for example, the government provides credit guarantees for traders. But this is not the case in Mali. One of the main risks is managing inventory as the new harvest approaches because of the potential for rapid price declines. When asked whether village associations (AVs) could substitute for their networks of local buyers the traders felt that AVs were not generally well organized to perform this function.

The traders did not see cereal banks as having any impacts on their business because the quantities were so minimal. Management is an issue, however, and one of the traders had been asked by the Mayor to lend a commune CB stocks of grain for an inspection team to see (the CB having sold its stock to a trader).

Interview with rice growers in Rassogoma, Macina – December 18, 2009

The team met with 9 rice producers who all held some level of responsibility with the Cooperative Sidaway (‘‘Verité Arrivé’’ in Moré language). In this part of the Office du Niger (ON) irrigation scheme men cultivate rice while women cultivate onion in the dry season. The main challenge faced by farmers is that household size has been increasing while irrigated land area is fixed. When plots were originally attributed in 1992 it was on the basis of roughly 0.5 hectares per active member, but with population growth families may only have 0.2 hectares per active member. Only 10% of the area is cultivated in the off season due to water constraints, and there has been no change in this situation since 1992. It is possible to rent land from plots allocated to absentee civil servants but rental rates have increased from 75,000 CFA to 125,000 CFA per hectare per season. As a consequence of small area cultivated per family member only 3 out of 40 households, less than 10%, are self sufficient in cereals after paying for all their rice production expenses!!

The impact of water control on rice productivity is impressive. Prior to water control improvement in 1992 farmers harvested 30 sacks of paddy per hectare and after improvements this doubled to more than 60 sacks (each sack weighing between 75 – 100 kg). Costs of production have increased over time. Purchased inputs include seed (renewed once every four years), six 50kg sacks of fertilizer per hectare (100kg DAP and 200kg Urea), water use fees (67,000 CFA / hectare in both the wet and dry seasons¹), and animal traction rental (almost 70% of farmers rent animals at cost of 8 sacks of paddy per animal per season).

Seed multiplication is carried out by qualified farmer (*paysans semenciers*). First generation seed is purchased from the regional research center at Niono for 375 CFA / kg. Farmers purchase second generation seed from the *paysans semenciers* for 250 FCFA/ kg and usually replace the seed on just part of their area each year to spread the cost.

Fertilizer subsidies have helped to reduce costs of production over the past two years (12,500 CFA per sack, roughly half the commercial price). Fertilizer credit is available through the Union des Caisses at 12% interest. There have been problems with both the quality of subsidized fertilizer (old stocks and doubts about nutrient content integrity) and timeliness of delivery.

The high level of animal rental is due to a combination of factors. In the mid-80s credit was available for animal traction purchase. But farmers sometimes had to make distress sales of animals and equipment and now there is no source of medium-term credit to replace them. Hence today animals are rented from Peulh herdsman in exchange for paddy.

¹ Until recently the off season water fee was much lower, but recently increased to the same amount as the wet season even though productivity is lower. The decision is under review due to widespread complaints by farmers.

Farmers sell their paddy production during two main periods. The first period is February/march in order to pay for water charges that are due by March 31. The second period is April/May in order to have funds for fertilizer purchase. Surprisingly it is more profitable to sell their production in the form of paddy (150 CFA / kg) than in the form of rice (225 CFA/ kg).² This indicates that the by-products of paddy dehulling have significantly greater value outside the ON, and indeed the wholesale buyers have their own dehullers and sell the byproducts for animal fattening around Segou and Bamako. This begs the question as to why farmers do not undertake animal fattening themselves as a means to add value to the by-products of rice milling. Farmers stated that they have neither the expertise nor the resources to undertake animal fattening. Also, only two farmers undertake fish farming, and that extensively, using holes in the ground left by a construction company. Some of the larger producers in the ON area also provide dehulling services.

Because of low levels of self-sufficiency in cereal production farmers have been operating their own cereal bank “PECAN” for 20 years. Farmers who borrow repay in kind with 10% interest and, due to low levels of default, have grown the cereal bank stock from 4 tons of rice to 13 tons presently. Anyone can borrow, including farmers from other villages, and loans are made during the *soudure* period (July/August).

The farmers’ cooperative is critical to the overall viability of rice production activities. All households in the village are members of the cooperative. The cooperative provides loan guarantees for fertilizer credit, as well as cash loans to help members pay water use fees and avoid losing their irrigated plots. The cooperative provides dehulling services for 10% of the paddy processed. All loans are recovered in kind at the time of rice processing on the basis of an estimated sale price of 110 CFA/kg. Each farmer’s produce is identified and any balance from the sale proceeds returned to the farmer in cash or kind. The cooperative also has its own cereal reserve stock that it lends to members without interest.

There would appear to be some opportunities for innovation in the ON to improve food security that could be explored. These include increased off season cultivation through improved water use efficiency, integrating livestock fattening into the farming system, and expanding fish farming.

Some miscellaneous discussion points among the team

The main drivers of internal demand for maize are population growth, the increasing share of population in urban centers (approx 37% currently), and increased demand for poultry products as incomes rise. The same factors are driving regional demand for Malian maize.

² For small quantities of paddy farmers may sell rice and keep the by-products for their own livestock.

Critical factors affecting the competitiveness of Malian maize on regional markets will be world market prices and domestic costs of production for maize, especially the cost of fertilizer. This underlines the relevance of the PROMISAM regional competitiveness (IPP/EPP) study being undertaken with funding from Syngenta Corporation. Sensitivity analysis of the profitability of maize in different zones at different international maize prices and fertilizer costs would permit “mapping” of conditions under which Malian maize from different zones is competitive on regional markets.

Improved maize varieties have been disseminated in recent years but to what extent is there empirical information on the level of adoption?

The team discussed the question of extension structures. In general extension structures are very weak with the possible exception of Office du Niger. This means that more attention needs to be given to radio and television diffusion of new technology. The example of Nerica rice demonstrates this. Demand for seed of Nerica was very strong because of the publicity over the television and radio as part of the Initiative Riz. But there is a downside to not having effective technology diffusion structures. The available Nerica seed was of poor quality and disseminated even in regions where it was not appropriate, and many farmers have been disappointed by the results.

The team recognized that, in the case of Koutiala, Bt cotton would not by itself be adequate to restore cotton profitability. The main constraint on cotton yields in Koutiala, other than rainfall, is low soil fertility.

Proposition de guide d'entretien pour une reconnaissance rapide CSA-IER-PROMISAM des filières céréales sèches auprès des producteurs et commerçants de Sikasso, Koutiala and Macina

Quelques questions de recherche :

Quelles sont la structure, le comportement, et la performance du commerce des céréales actuellement au Mali et quels les changements intervenus depuis les 20 dernières années ?

Comment les stratégies de commercialisation des producteurs ont changé pendant les 20 dernières années et comment ces stratégies et changements diffèrent par région et type de producteurs ? (niveau d'équipement, production de cultures de rente) ?

Comment la participation du producteur dans la chaîne de valeur du coton affecte la productivité des céréales sèches et la sécurité alimentaire au niveau du ménage et comment la relation diffère selon les types de ménage et à travers le temps?

Quelle sont les options de type de spéculation, politique, et de technologie susceptibles d'améliorer le bien-être des producteurs en augmentant la productivité et la participation au marché des chaînes de valeur des cultures de rente et des céréales sèches et comment les résultats anticipés vont différer selon les différents types de ménages ?

1. Guide d'entretien Producteurs

(Les questions ci-dessus sont conçues principalement pour les zones de Sikasso et Koutiala)

Quelles sont les principales productions alimentaires en termes de superficie? (plus grande superficie, deuxième grande superficie)

Pendant les cinq dernières années, est-ce que l'une de ces productions alimentaires a connu une augmentation de sa superficie ? Si oui, pourquoi ?

Pendant les cinq dernières années, est-ce que l'une de ces productions alimentaires a connu une diminution de sa superficie ? Si oui, pourquoi ?

Pendant les cinq dernières années, est-ce que le nombre de producteurs de coton a augmenté, diminué ou resté stable? Pourquoi ?

Pour les producteurs qui ont cultivé du coton cette année, est ce que les superficies de coton ont augmenté, diminué ou resté stables pendant les cinq dernières années? Pourquoi ?

Quels sont les produits agricoles les plus rentables à produire pour la vente par les producteurs ? (plus profitable, profitable, moins profitable,)

Quels sont les produits agricoles qui sont devenus plus rentables durant les cinq dernières années?

Quels sont les produits agricoles qui sont devenus moins rentables durant les cinq dernières années?

Quels sont les produits agricoles pour lesquels l'utilisation de l'engrais est rentable ?

Est-ce que le nombre de producteurs qui utilisent les engrais a diminué durant les cinq dernières années ? Pourquoi ?

Pour les producteurs qui ont utilisé les engrais cette année, est ce que les quantités appliquées aux cultures ont augmenté ou diminué durant les cinq dernières années ?

Quelles sont les céréales que les producteurs vendent (plus grande quantité vendue la première, deuxième grande quantité) ?

Pour chacune de ces céréales, quand est ce que les producteurs vendent?

Pour chacune de ces céréales quelle est la période de vente la plus profitable?

Pourquoi certains producteurs ne vendent pas pendant les périodes de vente les plus profitables?

A qui les producteurs vendent leurs céréales? (acheteurs résidant dans le village ? acheteurs dans les marchés locaux, acheteurs des villes, AV ?) Identifier tous les types d'acheteurs.

Vendez-vous toujours aux mêmes acheteurs ou à différents acheteurs? Pourquoi ? Pour chaque type d'acheteur, est ce que leur nombre a augmenté, diminué ou resté le même pendant les dix dernières années ?

Est-ce que les producteurs vendent individuellement leurs céréales ou se regroupent-ils souvent pour négocier avec un acheteur?

Quel est le type d'acheteur qui permet de profiter plus de la vente de céréales?

Est ce que certains acheteurs offriront de meilleurs prix si les céréales sont plus propres?

Est-ce que certains acheteurs vous loueront ou offriront des sacs gratuits si vous leur vendez vos céréales ?

Est-ce que certains acheteurs enverront un véhicule dans le village pour acheter vos céréales?

Comment obtenez-vous l'information sur les prix?

Est-ce que l'information sur les prix que vous possédez est utile dans vos négociations avec les acheteurs ?

Existe-t-il d'autres types d'information sur les prix qui vous sont utiles mais dont vous ne disposez pas?

Est-ce que certains producteurs achètent des céréales pour combler des déficits alimentaires? Pourquoi ?

Est-ce que le nombre de producteurs qui achètent les céréales a augmenté ou diminué durant les dix dernières années? Pourquoi ?

Si un producteur veut acheter des céréales, avec qui achète-t-il ? (un autre producteur, banque de céréales, commerçant)

Quelle est la période d'achat pour la plupart des producteurs? Pourquoi ?

Pour les producteurs qui achètent des céréales, quelles sont leurs sources d'argent ?

Existe-t-il une banque de céréales dans ou près du village?

Si oui, est ce que les producteurs préfèrent vendre à la banque de céréales ou un commerçant? Pourquoi ?

Si oui est ce que les producteurs préfèrent acheter avec la banque de céréales ou un commerçant? Pourquoi ?

Quels sont les avantages et inconvénient des banques de céréales?

Quelles sont les principales sources non agricoles pour les homes?

Pour chacune des sources, quelle est la principale période d'activité?

Quelles sont les principales sources de revenus non agricoles pour les femmes?

Pour chacune des sources quelle est la principale période d'activité?

2 Guide d'entretien Commerçants (faire la distinction entre les commerçants hommes et femmes)

Nombre d'années d'expérience dans le commerce des céréales?

Avez-vous votre propre moyen de transport ou bien vous louez?

Pensez vous que le nombre de commerçants de céréales a augmenté ou diminué au cours des 10 dernières années, les 20 dernières années?

Combien y a-t-il, aujourd'hui, de commerçants hommes et femmes?

Ce ratio (ce nombre) comparé aux 10 dernières années, 20 dernières années, a-t-il changé ?

Aujourd'hui quelles sont les principales spéculations (céréales) commercialisées par ordre d'importance en volume ?

- Est-ce que cela varie selon que l'on soit commerçant homme ou femme?

Il y a-t-il un changement dans les spéculations commercialisées en volume par rapport à 10 ans/20 ans passés ?

Présentement quels sont les principaux marchés de destination, en volume, de vos différents produits (céréales)?

- Est-ce que cela change selon que l'on soit homme ou femme?

Les principaux marchés de destination de vos produits ont-ils changé, en volume, par rapport à 10/20 ans passés ?

Selon vous, dans le futur, quels sont les marchés de destination, par produit, qui seront les plus importants ?

- Faire la distinction entre destinations nationales et régionales
- Est-ce que les commerçants femmes partagent les mêmes idées que les hommes dans ce domaine

Quels sont vos marchés d'approvisionnement (par produit)? Y a-t-il eu un changement dans la disponibilité des céréales auprès des producteurs qui vous approvisionnent ?

Faites-vous des arrangements (contrats) avec les producteurs pour acheter leurs céréales avant les récoltes ? si oui, pour quels types de céréales et/ou types de producteur ?

Le changement intervenu dans le secteur du coton a-t-il affecté la production de céréales ? comment ? quand avez-vous perçu ce changement ?

Quel impact pensez-vous que la privatisation de la CMDT aura sur la production des différentes spéculations céréalières?

Est-ce que les commerçants achètent et stockent pour la période de soudure? Quelles sont les types de céréales qu'ils achètent et stockent ?

- cela varie-t-il selon que le commerçant soit homme ou femme?

Quelles sont les sources d'informations que vous utilisez pour prendre vos décisions de commercialiser tel ou tel type de céréales et où ?

Avez-vous toutes les informations dont vous avez besoin pour prendre vos décisions d'achat et de vente ou bien certaines informations vous manquent?

- cela varie-t-il que l'opérateur soit homme ou femme?

Quels sont les gros risques (pouvant occasionner des pertes financières) dans vos affaires ?

- Ces risques changent-ils selon que l'on soit femme ou homme?
- varient-ils par spéculation
- changent-ils par marché de destination

S'il y a changement de ces risques, comment ont-ils changé il y a 10 ans/20 ans?

Quelles sont les principales contraintes à la rentabilité du commerce des céréales?

- Ces contraintes sont-elles les mêmes pour les hommes que pour les femmes ?
- Ces contraintes varient-elles d'une céréale à une autre?
- Ces obstacles varient-ils par marché de destination

S'il y a changement, comment est-ce que ces contraintes ont changé par rapport aux 10/20 années passées?

Est-il plus profitable de vendre les céréales à l'intérieur du Mali ou en l'exportant dans les marchés de la sous-région ? Pourquoi ? (Se faire une idée des coûts / risques additionnels)

Les banques de céréales installées par le Gouvernement ont-elles un impact sur vos affaires? Que pensez-vous des Banques de céréales (sont-elles utiles ? sont-elles opérationnelles ? etc...)