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Identifying Opportunities in Ghana's Agriculture: Results from a Policy Analysis Matrix

Ghana Strategy Support Program (GSSP)

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September 15, 2008

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Summary

Recent increases in cereals prices raise questions about agricultural priorities in Ghana. This report presents an application of the Policy Analysis Matrix (PAM) to the problem of identifying opportunities to enhance agriculture's contribution to economic growth and poverty alleviation in the country. The PAM is a budget-based method that was applied to study the social and private profitability of six maize production systems and six rice production systems. The results indicate that all twelve of the systems contribute to national economic growth and private income generation among farmers, at least under the high cereals prices that prevailed in 2007. Maize systems show a higher rate of return (lower cost/benefit ratio) than rice systems. If prices returned to lower levels experienced in 2005, however, rice systems would be privately and socially unprofitable. Return to the still lower prices of 2002 would leave both the maize and rice systems unprofitable.

The PAM was also used to assess the impact of alternative interventions for increasing profitability in the face of lower output prices. The results suggest that higher adoption of input technologies could make maize profitable under a very wide range of prices. However, fertilizer prices are not likely to be the constraining factor input adoption as the price of fertilizer has little impact on farm profitability given current levels of fertilizer use. Rather, further research is needed to determine how to promote improved maize production technology. For rice systems there appears to be room to enhance profitability through post-farm interventions to reduce processing losses and to improve the quality of locally grown rice. Rice systems would be profitable under very low output prices if Ghana achieved the processing conversion rates and milled rice quality found in other countries.

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1. Introduction

By the end of 2007, cereals prices as recorded by the FAO had risen to more than twice their level from two years before. Prices rose an additional 25 percent in the first six months of 2008 (FAO, 2008a). Between August 2007 and August 2008, the price of maize for export from the United States rose by more than 60 percent while the price for exported Thai rice more than doubled. These dramatic increases in cereals prices have raised a number of questions about agricultural priorities and prospects in Ghana. This report represents an application of a simple analytical tool, the Policy Analysis Matrix (PAM), to the problem of identifying opportunities to enhance agriculture's contribution to economic growth and poverty alleviation in the country. The results of the analysis suggest areas that warrant more detailed study.

Agriculture's central role in Ghana's economy suggests that growth in the sector could stimulate both greater general economic expansion and poverty alleviation. Each year from 2003 through 2006 agriculture accounted for 65 to 80 percent of annual export revenues and over 36 percent of national income (GDP). Meanwhile just over half of the population is rural and derives at least some of its income from farming. The agricultural sector has grown at about 5 percent annually since the year 2000, and while this has tended to help the rural poor, poverty remains significant and deep. Rates of poverty in rural areas have fallen from about 50 percent in 1999 to 39 percent in 2006. Urban poverty rates are considerably lower than those in rural areas (11% in 2006).

As Figure 1 shows, Ghana's agricultural exports have grown in keeping with a general expansion of trade. But even as agriculture accounts for a large share of exports, Ghana must import substantial quantities of food. Moreover, despite growth in agricultural production and

exports, food imports have been rising. Figure 2 plots the trend in production and consumption of maize and rice in Ghana. As the figure shows, maize consumption far exceeds rice consumption, but while maize production satisfies most of the local demand, rice production is well below domestic consumption and the difference appears to be growing. This gap between consumption and production is ultimately filled with growing exports. According to the FAO, Ghana's import bill for rice rose from 40 million US dollars in 2001 to 58 million in 2003 and 108 million in 2004. Given the increases in rice prices since 2005 and the persistent gap between production and consumption, the import rice bills for 2007 and 2008 will probably be far higher than those recorded previously. Due to greater production, the import bill for maize is lower than that for rice. Indeed, Ghana occasionally exports more maize than it imports. Nonetheless, since maize prices are linked to international markets, consumers are facing higher prices for that grain as well as rice.

The central role of agriculture in Ghana's economy and the problems of persistent rural poverty, rising food costs, and rising food import bills raise important questions about the potential for government policy or investment to enhance the contribution of the agricultural sector. These questions are approached in this paper using the Policy Analysis Matrix.

2. Method

The Policy Analysis Matrix (PAM) applied here is structured to measure the contribution of specific agricultural systems to national income and to the private income of farmers. Using the PAM one can identify how a given public policy or investment would be likely to affect the general performance of the economy and the private income of farmers. Combined with information on the distribution of poverty, the results concerning farm income can suggest the impact of policy or investment on poverty alleviation. Thus the PAM allows one to compare the

impacts of alternative policies on rural poverty as well as on national economic performance. In this way, the PAM can help identify policies that would contribute significantly to both objectives.

As can be seen from the illustrative PAM in table 1, the Policy Analysis Matrix consists of three rows and four columns representing the budget for an activity. The first row of the matrix is a budget based on prices that producers face in the existing market. These market prices measure costs and revenues to private individuals and are called “private prices”. The budget is divided into four categories: revenues (A), costs of intermediate inputs (B), costs of labor and capital (C), and profits (D). Profits are calculated by subtracting the two cost categories (B and C) from revenues (A).

The second row of the PAM presents the budget under a scenario in which the producer faces prices that would emerge in the absence of government policies or market failures that directly influence market prices. These prices measure the contribution of an activity to national income and are referred to as “social prices”. Social prices reflect the value or cost of a good to the national economy rather than the value or cost to the private agent. In the presence of a tax, for example, a private cost will include the actual value of the good plus the value of the tax. The private and social price will therefore differ by the tax. While the private profits measure the contribution of an activity to private incomes, the social profits measure the contribution of an activity to national income. These social profits (H in the PAM) are calculated as the social revenue (E) minus the social costs (F and G). If a crop is produced through an activity that achieves positive social profits the country may be said to have a comparative advantage in producing that commodity.

To be attractive to producers and alleviate poverty, an activity must have positive private profits. Meanwhile, to be continuously sustainable without government support an activity must have positive social profits. Table 1 presents an example of an activity that is profitable in private terms (and therefore attractive to producers), but is unprofitable socially (and therefore actually reduces national income).

The third row in the PAM reveals how a divergence between private and social profits emerges. The “divergences” row in the PAM is simply the difference between the private budget and the social budget. The first column of this row reveals the divergence emerging through policies affecting output prices. In this example, output prices are inflated through some policy, like an import duty, which raises local prices above the level that would otherwise exist. Because of such a policy, private revenues per acre are \$22,000 rather than \$20,000, and the divergence in revenues (I) is \$2,000.

The PAM considers intermediate input costs and other costs separately because these two types of costs tend to be affected by different policies. Trade and exchange rate policy will usually have a direct effect on the costs of intermediate inputs, which can be imported, but not on capital and labor. In table 1, there is no policy affecting input costs, but there is some intervention, such as the provision of low interest loans or grants, that lowers the cost of capital and labor. The country is using these resources, but the private agent is not paying the full cost of them. As a result the social cost is higher than the private cost and there is a negative divergence shown in the PAM in (K). Here the negative value reflects a reduction in costs to the private agent. The full effect of policies on profits is shown in (L) in the PAM.

In addition to yielding measures of social and private profitability, the PAM provides cost/benefit ratios as well as indicators of rates of return and rates of trade protection. For

example, the cost/benefit ratio to a private agent is the sum of (B) and (C) divided by (A). If this ratio is less than one, an activity is profitable. The difference between the ratio and one indicates the rate of return on an investment in this activity. For example, a cost/benefit ratio of 0.9 would imply that $\text{¢}1.0$ worth of output could be generated from a cost of $\text{¢}0.9$. The nominal rate of protection (NPC) is a common measure of trade protection and can be extracted from the PAM as (A) divided by (E). In table 1, the NPC is $22,000/20,000$ or 1.1, indicating that revenues are increased by 10 percent due to protection from imports. The producer subsidy equivalent (PSE) is a more complete measure of protection from trade as it accounts for factors affecting input and output prices. The PSE is extracted from the PAM as (L) divided by (A). It measures the impact of policies on profits as a share of revenues.

3. Application

PAMs were developed to represent the production of maize and rice under different technologies in different regions. In total 12 systems were analyzed. Large-scale, small-scale, and low-input-small-scale maize were studied in Upper West Region (Sisala East) and in Brong Ahafo (Nkoranza). In addition, large-scale and small-scale valley bottom rice systems were modeled in Northern Region in Tolon Kumbugu and Yendi. Finally upland rice and irrigated rice in Tolon Kumbugu were also analyzed. PAM results for each of these systems are presented in tables 2A and 2B. Detailed farm budgets for the systems are presented in the appendix.

To formulate these budgets, farm surveys were administered to 200 households, 50 in each of Sisala East, Nkoranza, Tolon Kumbugu and Yendi. Sampling methods insured that a minimum number of representatives of each farming system were surveyed. Surveys focused on the quantity and prices of farm inputs and outputs. The budgets that were derived based on modal responses were then compared to data from the Ministry of Food and Agriculture (MoFA)

for validation. Additional expert informants and MoFA data were used to estimate post-farm costs. Similarly, information from the Ministry of Trade and Industry was used to estimate import prices, duties and costs. Data were collected between November 2007 and February 2008.

Maize systems in Brong Ahafo were chosen for study because the region is a major supplier of maize for the country. Upper West is also maize surplus, but total production is much lower there. Northern Region is the only region of Ghana that consistently produces more rice than it consumes. The range of farming systems reviewed in Northern reflects the potential for the traditional valley bottom technology as opposed to upland rice and irrigated schemes.

Figures 3 and 4 summarize the basic features of the 12 systems and the differences among them. The two low input maize systems apply no NPK fertilizer and achieve a modest yield of 1,500kg per hectare, corresponding to about 6 bags per acre. The four other systems achieve yields of about 2,200 kg per hectare (9 bags per acre). Because of differences in natural fertility, these yields require greater use of chemical fertilizer in Upper West (Sisala East) than in Brong-Ahafo. Among the rice systems, the irrigated technology has by far the highest yields, reaching 4,300 kg per hectare, equivalent to 20 bags per acre (paddy). Other systems have yields ranging from 2,200 to 2,800 kg per hectare, or 11 to 14 bags per acre. The high yields of the irrigated rice system come with much higher use of inputs including fertilizer, but also labor and capital. Total private costs for irrigated rice come to over ₵900 per hectare (₵365 per acre) Other rice production systems have private costs between ₵400 and ₵500 per hectare (₵150 to ₵200 per acre).

4. Baseline Results

The PAM results are presented in tables 2A and B, and are summarized in table 3. These data reveal that all systems are privately profitable under 2007 prices. Private returns are lower in the rice systems than in the maize systems. Depending on the technology and location, rice profits range from ¢100 to ¢200 per hectare (¢40 to ¢80 per acre). In contrast, the low input maize systems generate profits of ¢250 per hectare (¢100 per acre), while private profits for maize in Brong Ahafo reach ¢500 per hectare (¢200 per acre).

Because there are few policies influencing prices in Ghana, the social profits are close to the private ones. The main divergence emerges through a 20 percent import duty on maize and rice. The effect of this duty is to raise private revenues above social revenues by the amount of the duty. Thus the social price, calculated in table 4, is the import price of the cereal plus inland transport and processing costs, adjusted for quality differences from imported cereals, while the private price is the import price plus inland transport and processing costs and the import duty, adjusted for quality differences. The private price calculated in this way was validated through comparison with reported market prices. Other divergences emerged through slight undervaluation of the New Cedi and distortions in the financial market, but as the PAM results indicate, these impacts are small, amounting to less than ¢5 per hectare, or two to three new cedi per ton of cereal. Adjusting private profits downward to account for the impact of the import duty and other policies produces estimates of social profits that are low, but positive. Overall, the producer subsidy equivalents in table 3 indicate modest rates of trade protection for these activities.

Table 2 and table 3 show that the contribution of the maize systems to the national economy is generally larger than that of the rice systems. The later are in some cases only marginally profitable under social prices. The social cost-benefit ratios in table 4 suggest that

¢0.5 to ¢0.6 spent on maize production generates ¢1.0 worth of output, while ¢0.8 to ¢0.9 are required to generate ¢1.0 from rice. Under 2007 prices, irrigated rice requires ¢0.97 to generate ¢1.0. These results suggest that at 2007 prices expanded domestic rice production would be a cost effective alternative to imported rice and that expanded maize production could be profitably exported in to regional markets. The irrigated system appears only marginally profitable given its high costs.

5. Alternative Scenarios

The significance of the results regarding the profitability of these maize and rice systems depends on whether the prices that existed in 2007 reasonably indicate future conditions. As Figure 5 shows, 2007 prices were well above the prices that obtained in the 2001-2006 period. Biofuels demand, feed demand, income growth in Asia, poor weather, and other factors all contributed to high cereals prices in 2007 and 2008. Since some of these factors may be reversed or offset by production growth it is likely that commodity prices will decline from the peaks of 2007 and 2008. Table 5 presents private profits if prices fell to the 2005 levels and technology was unchanged. Under these circumstances, low input maize systems are only marginally profitable and all rice systems operate at a loss in private terms. The irrigated rice system is especially unprofitable, given its high costs. At 2002 prices none of the systems is profitable. Social profits are slightly lower than private profits in all cases. These results suggest a need for interventions to raise the private and social profitability of the systems if they are to contribute to sustained income in the face of variable output prices.

Because few inputs are used in most systems, there is little room to increase profitability by reducing production costs per acre. Indeed, labor accounts for over 50 percent of costs in most of the budgets, with intermediate inputs coming to only 25 to 40 percent of costs. Thus efforts to

reduce fertilizer costs via price subsidies, for example, would have little direct impact on profitability of the systems given current levels of fertilizer use. (An improved input distribution system, however, might encourage farmers to move from the low-input maize technologies to the other maize systems, which could have considerable positive effects.) While reducing costs per acre would be difficult, improved technology, including expanded fertilizer use, could result in reduced costs per ton of output, increasing profitability. Agronomic research suggests that use of improved maize seeds and appropriate fertilizer could raise maize yields to 4,000 kg per hectare (16 bags per acre). Such a production system would raise profits to over ₺1,000 per hectare (₺400 per acre) at 2007 prices and would continue to generate profits at 2005 or 2002 prices.

In contrast to maize, modest changes in farm technology are not likely to have a large effect on rice profits. However, a large share of costs in the rice system emerges after harvest, during the transformation from paddy rice to milled rice. As Figure 6 indicates, just over half of the costs in the rice systems emerge post-farm. Thus, interventions to reduce post-farm costs in the rice system could enhance farm profitability. One source of high cost in Ghana emerges from high losses in processing. Rice from northern regions is normally parboiled using a technology that results in considerable burning and loss. Further, the milling losses in Ghana are unusually high. Internationally a kilogram of rice converts to 0.65 kilograms of milled rice. Ghana's mills typically produce only 0.50 to 0.55 kilograms of milled rice per kilogram of paddy. A PAM can simulate the effect of raising the conversion rate in Ghana by reducing the losses in conversion when calculating price (table 3). The combined effect of raising the conversion rate to 0.65 and increasing yields to 3,200kg per hectare (15 bags per acre) by applying 200kg of SoA would make all systems except the irrigated rice system privately and socially profitable even at the 2002 prices (Figure 7).

The profitability of rice systems is undermined by the substantial quality discounts on the price of domestic rice. Such discounts are not uniformly recorded in West Africa. According to data from the West Africa Agricultural Trade Network (tradenet), imported and local rice sell for roughly the same prices in Togo's markets (Lomé and Bitou), but there is a 20 to 30 percent discount on local rice in Ghana. Consumers indicate that their preference for imported rice is based on impurities, inconsistencies, and broken kernels in local rice. Many of these problems could be addressed through better post-harvest practices both on-farm and off the farm. If one calculates a price in table 3 assuming that the quality discount falls to zero and the conversion rate rises to 0.65, then all production systems become profitable, even at the very low prices that existed in 2002 (Figure 8).

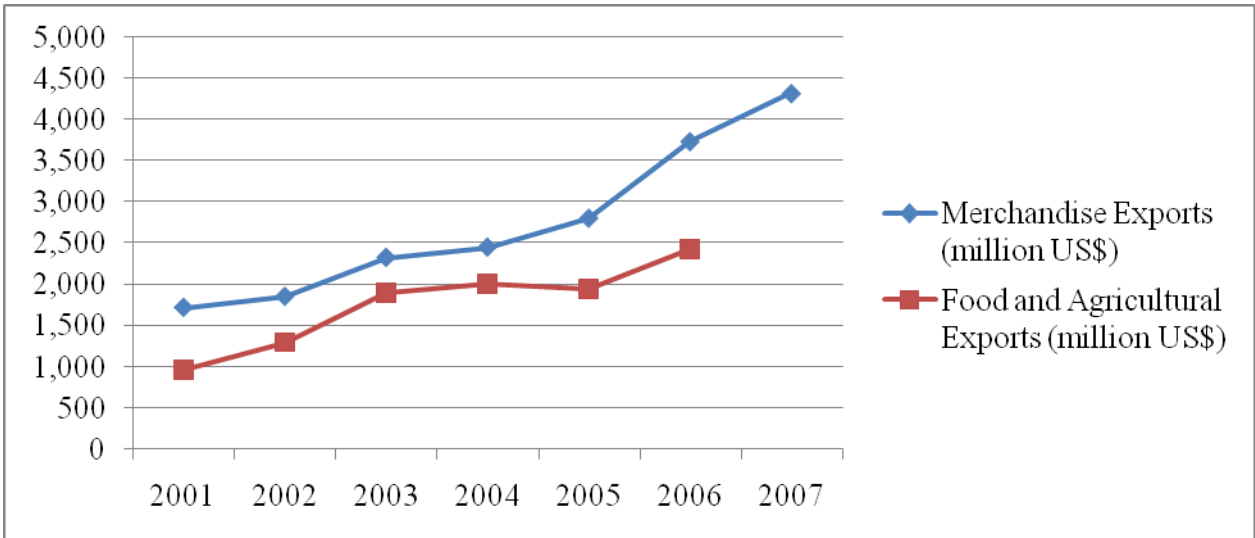
6. Conclusions

These PAM results suggest many rice and maize production systems are privately profitable and contribute to growth of the national economy. However, if cereal prices fall to the lower levels of the recent past, most of the rice systems lose their profitability. This suggests that interventions may be needed if rice production is to consistently contribute to poverty alleviation and economic output. Applying alternative scenarios in the PAM indicates that expanded fertilizer use could improve the social and private profitability of both the rice and maize systems. Additionally, reduction of post-harvest losses and improvement in processing quality could enhance the rice systems. The relatively small divergences in the PAMs, imply that there is little room to affect private profitability through policy reforms affecting prices without creating costly efficiency losses. Instead, interventions to reduce the real costs or physical and quality losses in the systems are likely priorities.

While this analysis indicates that more intensive use of inputs might enhance the systems, it does not identify the current constraints to fertilizer use. Given the low use of fertilizer and thus low share of it in total farm costs, it is unlikely that price is a major factor in non-adoption. Inaccessibility of fertilizer could be an issue for producers in remote areas. Likewise, lack of finance or lack of knowledge could constrain adoption. The PAM results imply that investments to understand and correct weaknesses in the fertilizer distribution system may be well spent.

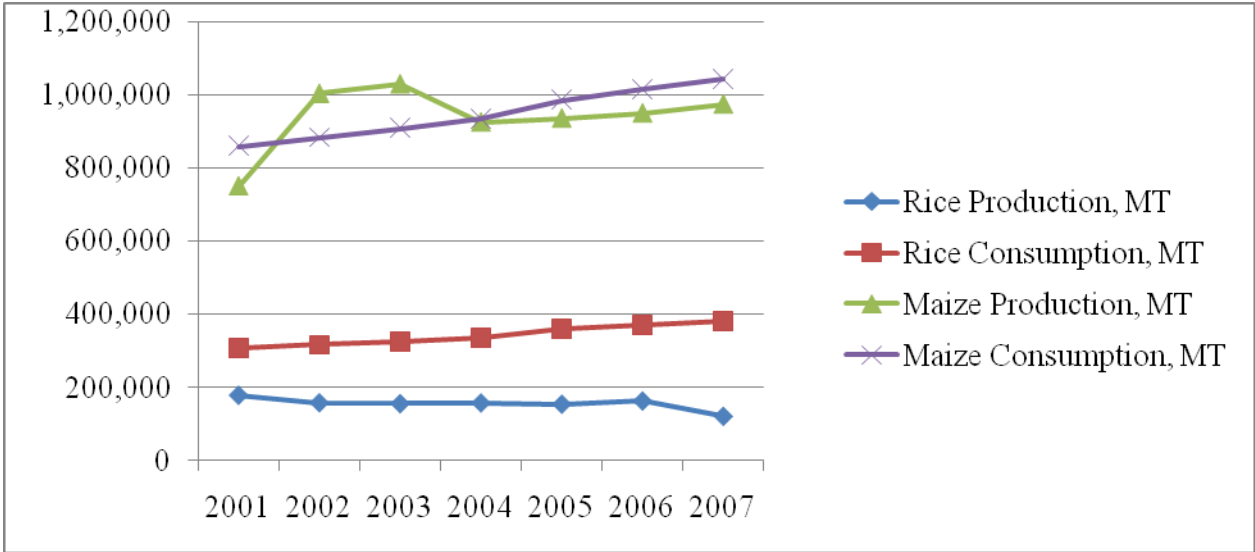
The PAM results point strongly to the importance of addressing milling losses and grain quality in the rice system. The significance of losses due to quality and milling and parboiling imply a need for further analysis to determine, for example, the significance of farm interventions to promote varietal uniformity or greater care to avoid impurities as opposed to improved post-farm technology. Any effort to enhance the farm incomes through post-farm interventions would require further analysis to ensure that markets are structured in a way that allows cost savings or revenue increases to be passed to producers in the form of higher farm-gate prices.

Figure 1. Total Exports and Agricultural Exports



Source: World Bank, World Development Indicators

Figure 2. Rice and Maize Production and Consumption Trends



Source: MoFA (SRID).

Figure 3. Input-Output Relations for Maize

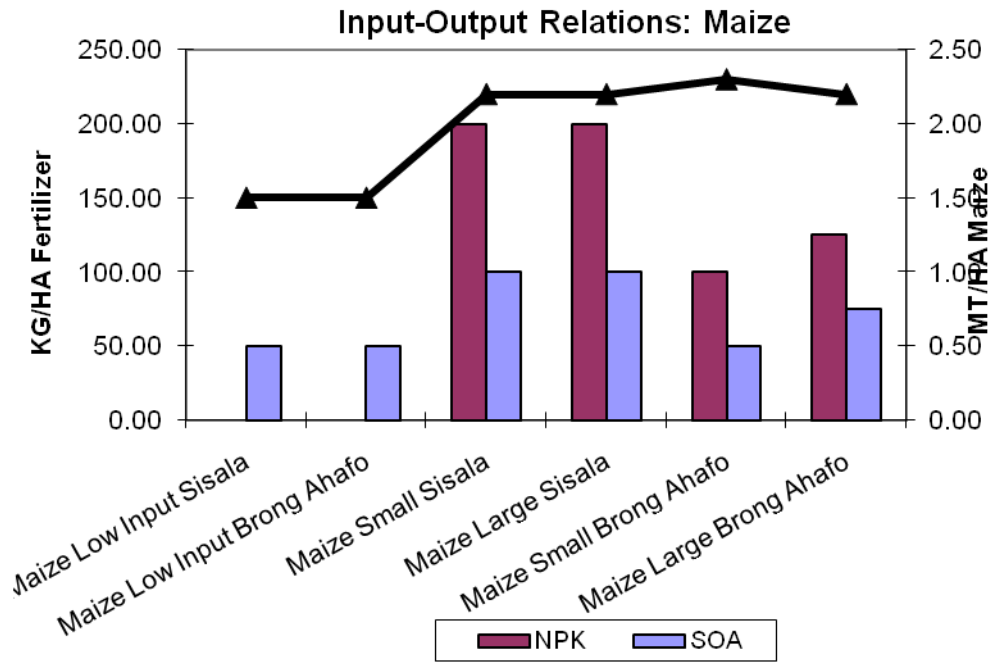


Figure 4. Input-Output Relations for Rice

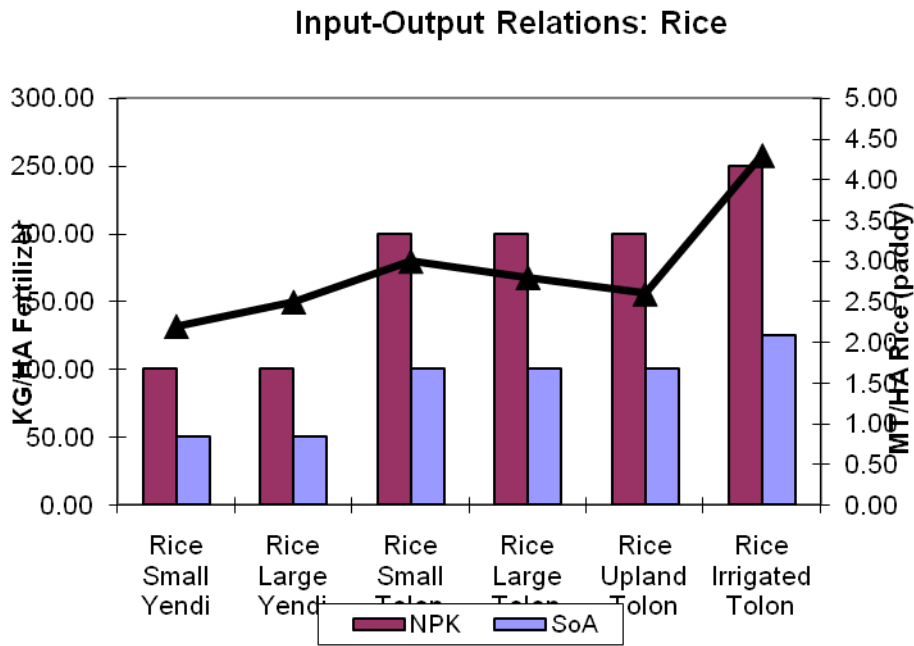
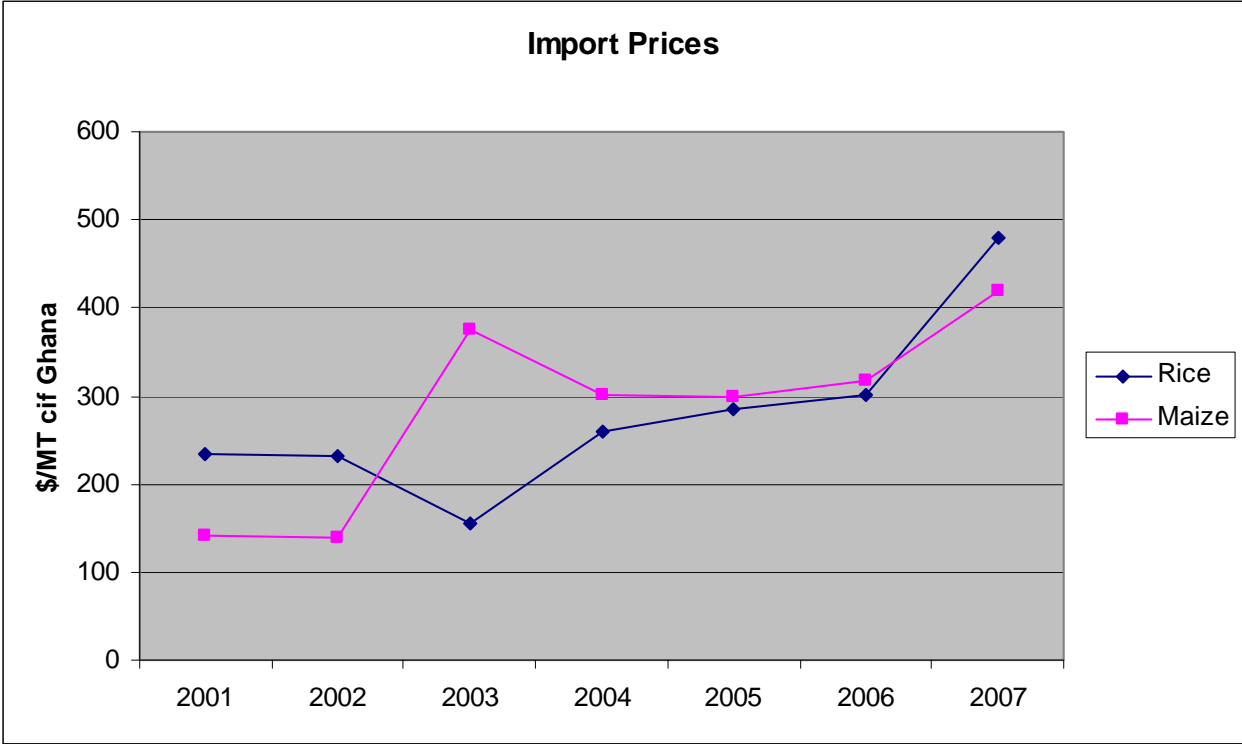


Figure 5. Import Prices: cif Accra.



Note: Prices in constant 2007 US dollars. Source: Ministry of Industry and Trade.

Figure 6. Distribution of Costs: Rice

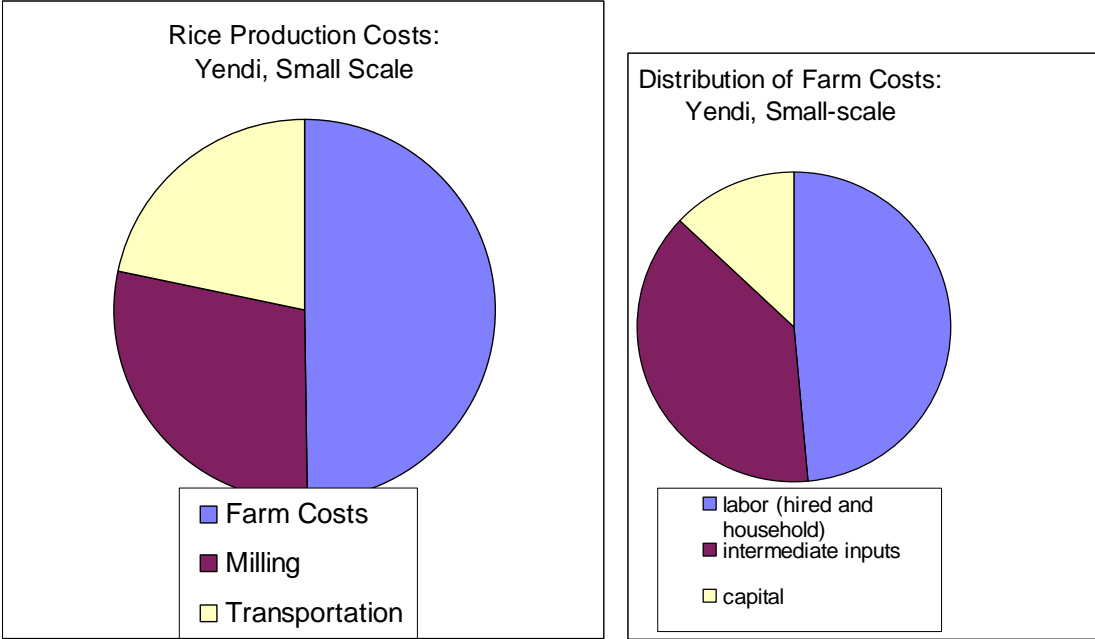


Figure 7. Profitability, 2002 Prices, Increased SoA & Improved Conversion Rate

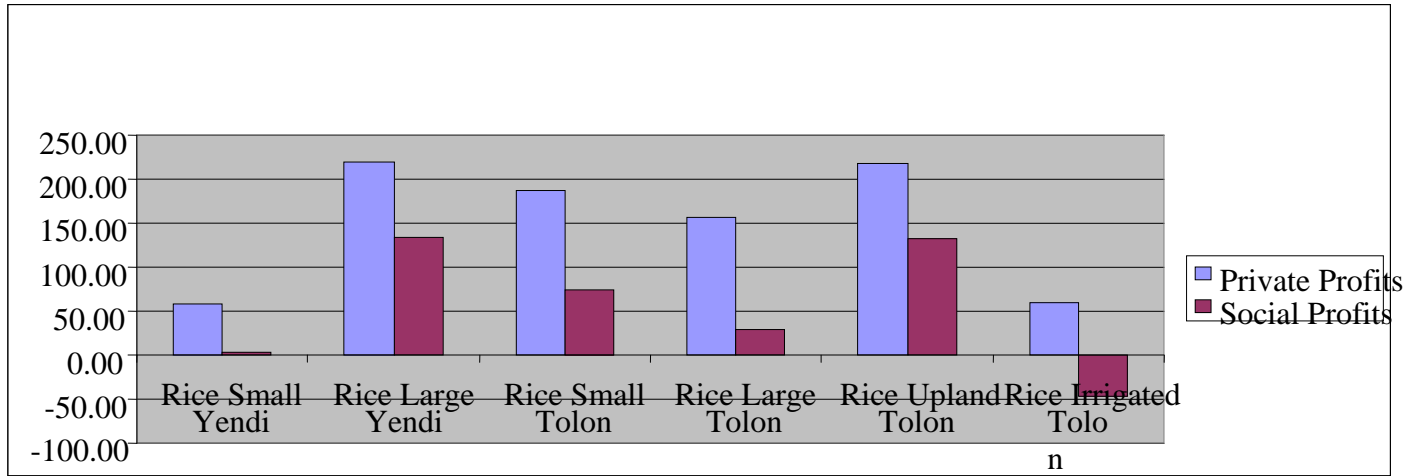


Figure 8.

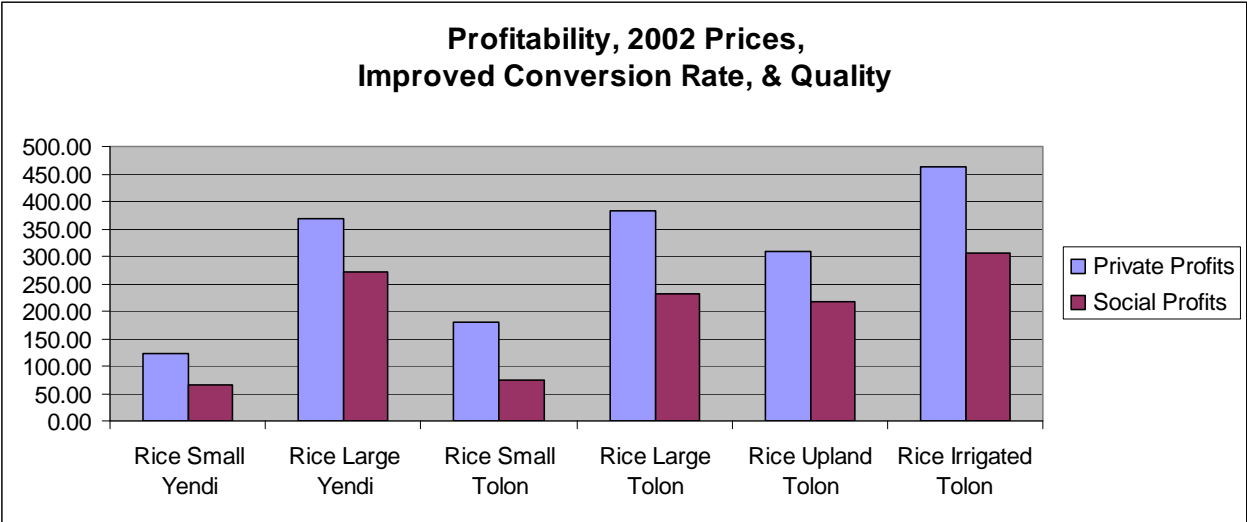


Table 1. Illustrative PAM

Sugar Production	Revenue (\$/Acre)	Input Costs (\$/Acre)	Labor & Capital Costs (\$/Acre)	Profits (\$/Acre)
Farm (private prices)	22,000 (A)	12,000 (B)	5,000 (C)	5,000 (D)
Nation (social prices)	20,000 (E)	12,000 (F)	10,000 (G)	-2,000 (H)
Divergence	2,000 (I)	0 (J)	-5,000 (K)	7,000 (L)

$D=A-B-C$. $H=E-F-G$. $L=I-J-K$.

$I=A-B$. $J=B-F$. $K=C-G$. $L=D-H$.

Private Cost/Benefit Ratio: $(B+C)/A$.

Social Cost/Benefit Ratio: $(F+G)/E$.

Nominal Protection Coefficient: A/E .

Producer Subsidy Equivalent: L/A .

Table 2 A Baseline PAM Results: Maize Systems

New Cedi/HA	Large-Scale Upper West (Sisala East)	Small-Scale Upper West (Sisala East)	Small-Scale, Low Input, Upper West	Large-Scale Brong-Ahafo Nkoranza	Small-Scale Brong-Ahafo Nkoranza	Small-Scale Low Input Brong Ahafo
(A) Private Revenues	764	764	521	836	874	570
(B) Private Input Costs	171	167	59	133	115	70
(C) Private Factor Costs	201	226	222	239	257	255
(D) Private Profits	392	371	240	464	503	245
(E) Social Revenues	652	652	444	724	757	494
(F) Social Input Costs	167	162	58	129	112	68
(G) Social Factor Costs	199	225	220	237	255	253
(H) Social Profits	286	265	166	357	390	173
(A) - (E)	112	112	76	112	117	76
(B) - (F)	4	4	2	4	3	2
(C) - (G)	2	2	2	2	2	2
(D) - (H)	106	106	73	107	113	73

Source: Author's calculation.

Table 2 B. Baseline PAM Results: Rice Systems (Northern Region)

New Cedi/HA	Large-Scale Valley Bottom, Tolon	Small-Scale Valley Bottom, Tolon	Small-Scale Irrigated, Tolon	Small-Scale Upland, Tolon	Large-Scale Valley Bottom, Yendi	Small-Scale Valley Bottom, Yendi
(A) Private Revenues	663	709	1,053	616	587	520
(B) Private Input Costs	210	194	249	163	120	124
(C) Private Factor Costs	299	314	659	287	303	293
(D) Private Profits	154	201	146	166	164	103
(E) Social Revenues	575	613	912	534	508	454
(F) Social Input Costs	204	189	242	159	117	121
(G) Social Factor Costs	298	310	646	287	302	291
(H) Social Profits	73	114	24	88	89	42
(A) - (E)	89	95	141	82	79	66
(B) - (F)	5	5	6	4	3	3
(C) - (G)	1	4	13	0	1	2
(D) - (H)	82	87	122	78	75	61

Source: Author's calculation

Table 3. Summary PAM Results

	Private Profits ¹	Social Profits ¹	Social Cost/benefit Ratio	Producer Subsidy Equivalent
Maize Low Input Sisala East	239.45	166.17	0.63	0.14
Maize Small Sisala East	370.98	264.83	0.59	0.14
Maize Large Sisala East	391.88	286.12	0.56	0.14
Maize Low Input Nkoranza	245.61	172.64	0.65	0.14
Maize Small Nkoranza	502.80	390.28	0.48	0.13
Maize Large Nkoranza	464.15	357.12	0.51	0.13
Rice Small Yendi	102.59	41.86	0.91	0.12
Rice Large Yendi	163.94	89.00	0.82	0.13
Rice Small Tolon-Kumbugu	200.84	86.92	0.86	0.16
Rice Large Tolon-Kumbugu	154.68	27.00	0.95	0.19
Rice Upland Tolon-Kumbugu	165.81	87.54	0.84	0.13
Rice Irrigated Tolon-Kumbugu	145.57	23.61	0.97	0.12

1. New Cedi per hectare.

Source: Calculated from tables 2A and 2B.

Table 4. Price Calculation

New Cedi/MT	Maize(Sisala East) CIF Price Accra: US\$420/MT		Rice (Tolon-Kumbugu) CIF Price Accra US\$480/MT	
	Private Price	Social Price	Private Price	Social Price
CIF Accra	409.0	398.0	468.0	456.0
Import duty	82.0	00.0	94.0	00.0
Port fees and charges	169.0	169.0	188.0	188.0
Cost landed into store, Accra	660.0	567.0	750.0	644.0
Haulage to shared market ¹	80.0	80.0	110.0	110.0
Cost in local wholesale market	740.0	647.0	860.0	754.0
Haulage to production zone	100.0	100.0	60.0	60.0
Value in production zone (import quality)	640.0	547.0	800.0	694.0
Quality Adjustment ²	288.0	246.0	552.0	479.0
Value in production zone (local quality)	352.0	301.0	248.0	215.0
Reported price in production zone	350.0	--	250.0	--
Haulage to farm	5.0	5.0	3	3
Farm-gate price	347.0	296.0	245.0	212.0

1. Shared market for maize is Kumasi. Shared market for rice is Techiman.
2. Quality adjustment is a 45 percent discount for maize. For rice this line includes transformation loss converting from milled rice to paddy (50%) and an additional 20 percent quality discount.

Costs based on expert informants interviews, Duty from Customs, Excise and Preventive Service (CEPS), Import prices from Ministry of Trade and Industry (MoTI), Transport costs were validated against SRID estimates.

Table 5. PAM Results: Alternative Price Scenarios

	2007	2005	2002
Maize cif Price (US\$/MT)	420	305	165
Rice cif Price (US\$/MT)	480	290	285
Private Profits (New Cedi/HA)			
Maize Low Input Sisala East	239.45	90	-91
Maize Small Sisala East	370.98	152	-114
Maize Large Sisala East	391.88	173	-93
Maize Low Input Nkoranza	245.61	96	-85
Maize Small Nkoranza	502.80	274	-4
Maize Large Nkoranza	464.15	245	-20
Rice Small Yendi	102.59	-125	-132
Rice Large Yendi	163.94	-58	-64
Rice Small Tolon-Kumbugu	200.84	-68	-74
Rice Large Tolon-Kumbugu	154.68	-94	-101
Rice Upland Tolon-Kumbugu	165.81	-65	-71
Rice Irrigated Tolon-Kumbugu	145.57	-250	-260

Social profits are consistently below private profits, as in table 3.

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Appendix A. Farm Budgets -- Private Prices

Commodity: Maize revised: 6/14/2008
 Production System: Large Scale Mono
 Location: Nkoranza-Brong Ahafo

PRIVATE BUDGET

INPUTS	Units of Measure/HA	Quantity	Market Price	Market Value	Market Value
		(in units/HA)	¢ Per Unit	¢ Per Ha	¢ Per Ha
TRADABLES:					
Seed Maize	(Kg/Ha)	25.00	0.40	10.00	
FERTILIZER					
NPK	(Kg/Ha)	125.00	0.45	56.25	
SoA	(Kg/Ha)	75.00	0.32	24.00	
AGROCHEMICALS					
Herbicide	Litre/Ha	4.00	4.00	16.00	
Insecticide	Litre/Ha	0.50	4.50	2.25	
Rodenticide				0.00	
Sub-Total (Tradables)					108.50

NON-TRADABLE FACTORS :

WAGE LABOR

Manual Land Clearing	(Mandays / Ha)	6.00	3.00	18.00	
Gathering/burning	(Mandays / Ha)	1.00	3.00	3.00	
Planting/sowing	(Mandays / Ha)	6.00	3.00	18.00	
Fertilizer Application 1	(Mandays / Ha)	4.00	3.00	12.00	
Fertilizer Application 2	(Mandays / Ha)	2.00	3.00	6.00	
Weeding/Hoeing 1	(Mandays / Ha)	8.00	3.00	24.00	
Weeding/Hoeing 2	(Mandays / Ha)	5.00	3.00	15.00	
Weed Spray 1	(Mandays / Ha)	3.00	3.00	9.00	
Weed Spray 2	(Mandays / Ha)	2.00	2.00	4.00	
Harvesting & Bagging of C	(Mandays / Ha)	8.00	3.00	24.00	
Harvest dehusking	(Mandays / Ha)	3.00	3.00	9.00	
Harvest drying	(Mandays / Ha)	2.00	3.00	6.00	
Harvest shelling	(Mandays / Ha)	3.00	2.00	6.00	
Harvest bagging of Grains	(Mandays / Ha)	3.00	2.00	6.00	
Gathering & loading	(Mandays / Ha)	2.00	3.00	6.00	
Sub total:					166.00

Maize, Large-Scale Monocrop, Brong Ahafo (continued)

continued	Units of Measure/HA	(in units/HA)	¢ Per Unit	¢ Per Ha	¢ Per Ha
OWNED CAPITAL*	Real interest rate**:		0.08		
Tools & small implements	Replacement Cost		9.05		
	Life span (yrs)		3.00		
	Annual depreciation		3.53		
	Share of use per HA		0.50		
	Depreciation/HA		1.76	1.00	1.76
Working Capital	¢ Per HA		14.67	1.00	14.67
Sub total:					16.43
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS					
Tractor hire plough & Harr	Per HA		1.00	45.00	45.00
of which:					
Capital depreciation cost share			0.60		27.00
Labor cost share			0.10		4.50
Tradable (fuel and spares) cost share			0.30		13.50
sub-total (shares must add to one)			1.00		45.00
Other hired services			1.00	36.05	36.05
of which:					
Capital depreciation cost share			0.60		21.63
Labor cost share			0.10		3.61
Tradable (fuel and spares) cost share			0.30		10.82
sub-total (shares must add to one)			1.00		36.05
TOTAL COSTS (excluding direct taxes)					371.98
TRADABLE COSTS					132.82
DOMESTIC FACTOR COSTS					239.17
Direct Taxes					0.00
OUTPUT :					
Grain	(Kg/Ha)	2,200.00	0.38		836.14
TOTAL REVENUE PER HA					836.14
NET REVENUE PER HA					464.15
Breakeven output price:		0.17			
Breakeven yield:		978.74			

Commodity: Maize revised: 6/14/2008
 Production System: Small Scale Mono
 Location: Nkoranza District-Brong Ahafo Region

PRIVATE BUDGET

INPUTS	Quantity	Market Price	Market Value	Market Value
TRADABLES	Units of Measure/HA	(in units/HA	¢ Per Unit	¢ Per HA
Seed Maize	(Kg/Ha)	20.00	0.40	8.00
NPK	(Kg/Ha)	100.00	0.45	45.00
SoA	(Kg/Ha)	50.00	0.32	16.00
Herbicide	litre	5.00	4.00	20.00
Sub-Total (Tradables)				89.00

NON-TRADABLE FACTORS :

HOUSEHOLD LABOR (NON-WAGE)

Planting/sowing	(Mandays / Ha)	2.00	1.50	3.00
Manure Application	(Mandays / Ha)			0.00
Fertilizer Application 1	(Mandays / Ha)	4.00	1.50	6.00
Fertilizer Application 2	(Mandays / Ha)	3.00	1.50	4.50
Harvesting & Bagging of C	(Mandays / Ha)	4.00	1.50	6.00
Harvest dehusking	(Mandays / Ha)	4.00	1.50	6.00
Harvest shelling	(Mandays / Ha)	3.00	1.50	4.50
Sub-total				30.00

WAGE LABOR

Manual Land Clearing	(Mandays / Ha)	8.00	3.00	24.00
Gathering/burning	(Mandays / Ha)	2.00	3.00	6.00
Non-selective Herb'cide	(Mandays / Ha)	4.00	2.00	8.00
Planting/sowing	(Mandays / Ha)	6.00	3.00	18.00
Fertilizer Application 1	(Mandays / Ha)	3.00	3.00	9.00
Fertilizer Application 2	(Mandays / Ha)	2.00	3.00	6.00
Weeding/Hoeing 1	(Mandays / Ha)	5.00	3.00	15.00
Weeding/Hoeing 2	(Mandays / Ha)	3.00	3.00	9.00
Weed Spray 1	(Mandays / Ha)	3.00	2.50	7.50
Harvesting & Bagging of C	(Mandays / Ha)	3.00	3.00	9.00
Harvest dehusking	(Mandays / Ha)	3.00	2.50	7.50
Harvest shelling	(Mandays / Ha)	2.00	3.00	6.00
Harvest bagging of grains	(Mandays / Ha)	3.00	3.00	9.00
Gathering & loading	(Mandays / Ha)	5.00	3.00	15.00
Sub total:				149.00

Maize, Small-Scale Monocrop, Brong Ahafo (continued)

continued	Units of Measure/HA	(in units/HA)	¢ Per Unit	¢ Per HA	¢ Per HA
OWNED CAPITAL*	Real interest rate**:		0.08		
Tools & small implements	Replacement Cost		25.75		
	Life span (yrs)		3.00		
	Annual depreciation		10.04		
	Share of use per HA		0.50		
	Depreciation/HA		5.02	1.00	5.02
Working Capital	¢ Per HA		13.33	1.00	13.33
Sub total:					18.35
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS					
Tractor hire plough & Harr	Per HA		1.00	50.00	50.00
of which:					
Capital depreciation cost share			0.60		30.00
Labor cost share			0.10		5.00
Tradable (fuel and spares) cost share			0.30		15.00
sub-total (shares must add to one)			1.00		50.00
Other hired services			1.00	35.00	35.00
of which:					
Capital depreciation cost share			0.60		21.00
Labor cost share			0.10		3.50
Tradable (fuel and spares) cost share			0.30		10.50
sub-total (shares must add to one)			1.00		35.00
TOTAL COSTS (excluding direct taxes)					371.35
TRADABLE COSTS					114.50
DOMESTIC FACTOR COSTS					256.85
Direct Taxes					0.00
OUTPUT :					
Grain	(Kg/Ha)		2,300.00	0.38	874.14
Stovers	(Kg/Ha)		0.00	0.00	0.00
intercrop	(kg/Ha)		0.00	0.00	0.00
TOTAL REVENUE PER HA					874.14
NET REVENUE PER HA					502.80
Breakeven output price:			0.16		
Breakeven yield:			977.06		

Commodity: Maize revised: 6/14/2008
 Production System: Small Scale Lower input
 Location: Nkoranza District-Brong Ahafo Region

PRIVATE BUDGET

INPUTS	Units of Measure/HA	Quantity (in units/HA)	Market Price ϕ Per Unit	Market Value ϕ Per HA	Market Value ϕ Per HA
TRADABLES					
Seed Maize	(Kg/Ha)	20.00	0.40	8.00	
SoA	(Kg/Ha)	50.00	0.32	16.00	
Herbicide	litre	5.00	4.00	20.00	
Sub-Total (Tradables)					44.00
NON-TRADABLE FACTORS :					
HOUSEHOLD LABOR (NON-WAGE)					
Planting/sowing	(Mandays / Ha)	2.00	1.50	3.00	
Fertilizer Application 1	(Mandays / Ha)	4.00	1.50	6.00	
Fertilizer Application 2	(Mandays / Ha)	3.00	1.50	4.50	
Harvesting & Bagging of C	(Mandays / Ha)	4.00	1.50	6.00	
Harvest dehusking	(Mandays / Ha)	4.00	1.50	6.00	
Harvest shelling	(Mandays / Ha)	3.00	1.50	4.50	
Sub-total					30.00
WAGE LABOR					
Manual Land Clearing	(Mandays / Ha)	8.00	3.00	24.00	
Gathering/burning	(Mandays / Ha)	2.00	3.00	6.00	
Non-selective Herbicide	(Mandays / Ha)	4.00	2.00	8.00	
Planting/sowing	(Mandays / Ha)	6.00	3.00	18.00	
Fertilizer Application 1	(Mandays / Ha)	3.00	3.00	9.00	
Fertilizer Application 2	(Mandays / Ha)	2.00	3.00	6.00	
Weeding/Hoeing 1	(Mandays / Ha)	5.00	3.00	15.00	
Weeding/Hoeing 2	(Mandays / Ha)	3.00	3.00	9.00	
Weed Spray 1	(Mandays / Ha)	3.00	2.50	7.50	
Harvesting & Bagging of C	(Mandays / Ha)	3.00	3.00	9.00	
Harvest dehusking	(Mandays / Ha)	3.00	2.50	7.50	
Harvest shelling	(Mandays / Ha)	2.00	3.00	6.00	
Harvest bagging of grains	(Mandays / Ha)	3.00	3.00	9.00	
Gathering & loading	(Mandays / Ha)	5.00	3.00	15.00	
Sub total:					149.00
OWNED CAPITAL*	Real interest rate**:	0.08			
Tools & small implements	Replacement Cost	25.75			
	Life span (yrs)	3.00			
	Annual depreciation	10.04			
	Share of use per HA	0.50			
	Depreciation/HA	5.02	1.00	5.02	

Maize, Small-Scale, lower input, Brong Ahafo (continued)

continued	Units of Measure/HA (in units/HA	¢ Per Unit	¢ Per HA	¢ Per HA
Machinery and equipment	Replacement Cost	0.00		
	Life span (yrs)	0.00		
	Annual depreciation	0.00		
	Share of use per HA	0.00		
	Depreciation/HA	0.00	1.00	0.00
Working Capital	¢ Per HA	11.47	1.00	11.47
Sub total:				16.49
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS				
Tractor hire plough & Harr	Per HA	1.00	50.00	50.00
of which:				
Capital depreciation cost share		0.60		30.00
Labor cost share		0.10		5.00
Tradable (fuel and spares) cost share		0.30		15.00
sub-total (shares must add to one)		1.00		50.00
Other hired services		1.00	35.00	35.00
of which:				
Capital depreciation cost share		0.60		21.00
Labor cost share		0.10		3.50
Tradable (fuel and spares) cost share		0.30		10.50
sub-total (shares must add to one)		1.00		35.00
Non-tradable intermediate inputs		0.00	0.00	0.00
of which:				
Capital depreciation cost share		0.00		0.00
Labor cost share		0.00		0.00
Tradable (fuel and spares) cost share		0.00		0.00
sub-total (shares must add to one)		0.00		0.00
TOTAL COSTS (excluding direct taxes)				324.49
TRADABLE COSTS				69.50
DOMESTIC FACTOR COSTS				254.99
Direct Taxes				0.00
OUTPUT :				
Grain	(Kg/Ha)	1,500.00	0.38	570.09
TOTAL REVENUE PER HA				570.09
NET REVENUE PER HA				245.61
Breakeven output price:		0.22		
Breakeven yield:		853.78		

Commodity: Maize revised: 6/14/2008
 Production System: Small Scale, Lower Input
 Location: Sisala East -Upper West
 Condition: Erratic Rainfall

PRIVATE BUDGET

INPUTS	Quantity	Market Price	Market Value	Market Value
TRADABLES	Units of Measure/HA (in units/HA)	¢ Per Unit	¢ Per HA	¢ Per HA
Seed Maize	(Kg/Ha)	22.00	0.80	17.60
SoA	(Kg/Ha)	50.00	0.38	19.00
Sub-Total (Tradables)				36.60
NON-TRADABLE FACTORS :				
HOUSEHOLD LABOR (NON-WAGE)				
Manual Land Clearing	(Mandays / Ha)	5.00	1.00	5.00
Planting/sowing	(Mandays / Ha)	3.00	1.00	3.00
Fertilizer Application 1	(Mandays / Ha)	3.00	1.00	3.00
Fertilizer Application 2	(Mandays / Ha)	3.00	1.00	3.00
Weeding/Hoeing 1	(Mandays / Ha)	6.00	1.00	6.00
Harvesting & Bagging of C	(Mandays / Ha)	4.00	1.00	4.00
Harvest dehusking	(Mandays / Ha)	4.00	1.00	4.00
Harvest drying	(Mandays / Ha)	6.00	1.00	6.00
Harvest shelling	(Mandays / Ha)	6.00	1.00	6.00
Harvest bagging of grains	(Mandays / Ha)	8.00	1.00	8.00
Gathering & loading	(Mandays / Ha)	4.00	1.00	4.00
Sub-total				52.00
WAGE LABOR				
Manual Land Clearing	(Mandays / Ha)	4.00	2.50	10.00
Planting/sowing	(Mandays / Ha)	7.00	2.00	14.00
Fertilizer Application 1	(Mandays / Ha)	5.00	2.00	10.00
Weeding/Hoeing 1	(Mandays / Ha)	7.00	2.00	14.00
Weeding/Hoeing 2	(Mandays / Ha)	5.00	2.00	10.00
Harvesting & Bagging of C	(Mandays / Ha)	6.00	2.50	15.00
Harvest dehusking	(Mandays / Ha)	3.00	2.00	6.00
Harvest drying	(Mandays / Ha)	3.00	2.00	6.00
Harvest shelling	(Mandays / Ha)	3.00	2.00	6.00
Gathering & loading	(Mandays / Ha)	4.00	2.00	8.00
Sub total:				99.00
OWNED CAPITAL*	Real interest rate**:	0.08		
Tools & small implements	Replacement Cost	11.00		
	Life span (yrs)	3.00		
	Annual depreciation	4.29		
	Share of use per HA	0.50		
	Depreciation/HA	2.14	1.00	2.14

Maize, Small-Scale, lower input, Sisala East (continued)

Continued	Units of Measure/HA (in units/HA	¢ Per Unit	¢ Per HA	¢ Per HA
Machinery and equipment	Replacement Cost	141.00		
	Life span (yrs)	15.00		
	Annual depreciation	16.73		
	Share of use per HA	0.10		
	Depreciation/HA	1.67	1.00	1.67
Working Capital	¢ Per HA	8.93	1.00	8.93
	(charged to 50% of cash expenses)			
Sub total:				12.75
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS				
Tractor hire plough & Harr	Per HA	1.00	45.00	45.00
of which:				
Capital depreciation cost share		0.60		27.00
Labor cost share		0.10		4.50
Tradable (fuel and spares) cost share		0.30		13.50
sub-total (shares must add to one)		1.00		45.00
Other hired services		1.00	30.86	30.86
of which:				
Capital depreciation cost share		0.60		18.52
Labor cost share		0.10		3.09
Tradable (fuel and spares) cost share		0.30		9.26
sub-total (shares must add to one)		1.00		30.86
Non-tradable intermediate inputs		1.00	4.94	4.94
of which:				
Capital depreciation cost share		0.80		3.95
Labor cost share		0.20		0.99
Tradable (fuel and spares) cost share		0.00		0.00
sub-total (shares must add to one)		1.00		4.94
TOTAL COSTS (excluding direct taxes)				281.15
TRADABLE COSTS				59.36
DOMESTIC FACTOR COSTS				221.79
Direct Taxes				0.00
OUTPUT :				
Grain	(Kg/Ha)	1,400.00	0.35	485.89
TOTAL REVENUE PER HA				485.89
NET REVENUE PER HA				204.74
Breakeven output price:		0.19		
Breakeven yield:		810.08		

Commodity: Maize revised: 6/14/2008
 Production System: Small Scale Mono
 Location: Sisala East -Upper West

PRIVATE BUDGET

INPUTS

TRADABLES

	Units of Measure/HA	Quantity (in units/HA)	Market Price ϕ Per Unit	Market Value ϕ Per HA	Market Value ϕ Per Ha
Seed Maize	(Kg/Ha)	22.00	0.80	17.60	
NPK	(Kg/Ha)	200.00	0.44	88.00	
SoA	(Kg/Ha)	100.00	0.38	38.00	
Sub-Total (Tradables)					143.60

NON-TRADABLE FACTORS :

HOUSEHOLD LABOR (NON-WAGE)

Manual Land Clearing	(Mandays / Ha)	5.00	1.00	5.00	
Planting/sowing	(Mandays / Ha)	3.00	1.00	3.00	
Fertilizer Application 1	(Mandays / Ha)	3.00	1.00	3.00	
Fertilizer Application 2	(Mandays / Ha)	3.00	1.00	3.00	
Weeding/Hoeing 1	(Mandays / Ha)	6.00	1.00	6.00	
Harvesting & Bagging of C	(Mandays / Ha)	4.00	1.00	4.00	
Harvest dehusking	(Mandays / Ha)	4.00	1.00	4.00	
Harvest drying	(Mandays / Ha)	6.00	1.00	6.00	
Harvest shelling	(Mandays / Ha)	6.00	1.00	6.00	
Harvest bagging of grains	(Mandays / Ha)	8.00	1.00	8.00	
Gathering & loading	(Mandays / Ha)	4.00	1.00	4.00	
Sub-total					52.00

WAGE LABOR

Manual Land Clearing	(Mandays / Ha)	4.00	2.50	10.00	
Planting/sowing	(Mandays / Ha)	7.00	2.00	14.00	
Fertilizer Application 1	(Mandays / Ha)	5.00	2.00	10.00	
Weeding/Hoeing 1	(Mandays / Ha)	7.00	2.00	14.00	
Weeding/Hoeing 2	(Mandays / Ha)	5.00	2.00	10.00	
Harvesting & Bagging of C	(Mandays / Ha)	6.00	2.50	15.00	
Harvest dehusking	(Mandays / Ha)	3.00	2.00	6.00	
Harvest drying	(Mandays / Ha)	3.00	2.00	6.00	
Harvest shelling	(Mandays / Ha)	3.00	2.00	6.00	
Gathering & loading	(Mandays / Ha)	4.00	2.00	8.00	
Sub total:					99.00

OWNED CAPITAL*

Real interest rate**:		0.08			
Tools & small implements	Replacement Cost	11.00			
	Life span (yrs)	3.00			
	Annual depreciation	4.29			
	Share of use per HA	0.50			
	Depreciation/HA	2.14	1.00	2.14	

Maize, Small-Scale mono-crop, Sisala East (continued)

	Units of Measure/HA	(in units/HA	¢ Per Unit	¢ Per HA	¢ Per Ha
Machinery and equipment	Replacement Cost	141.00			
	Life span (yrs)	15.00			
	Annual depreciation	16.73			
	Share of use per HA	0.10			
	Depreciation/HA	1.67	1.00		1.67
Working Capital	¢ Per HA	13.34	1.00		13.34
	(charged to 50% of cash expenses)				
Sub total:					17.16
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS					
Tractor hire plough & Harr	Per HA	1.00	45.00		45.00
of which:					
Capital depreciation cost share		0.60			27.00
Labor cost share		0.10			4.50
Tradable (fuel and spares) cost share		0.30			13.50
sub-total (shares must add to one)		1.00			45.00
Other hired services		1.00	30.86		30.86
of which:					
Capital depreciation cost share		0.60			18.52
Labor cost share		0.10			3.09
Tradable (fuel and spares) cost share		0.30			9.26
sub-total (shares must add to one)		1.00			30.86
Non-tradable intermediate inputs		1.00	4.94		4.94
of which:					
Capital depreciation cost share		0.80			3.95
Labor cost share		0.20			0.99
Tradable (fuel and spares) cost share		0.00			0.00
sub-total (shares must add to one)		1.00			4.94
TOTAL COSTS (excluding direct taxes)					392.56
TRADABLE COSTS					166.36
DOMESTIC FACTOR COSTS					226.20
Direct Taxes					0.00
OUTPUT :					
Grain	(Kg/Ha)	2,200.00	0.35		763.54
TOTAL REVENUE PER HA					763.54
NET REVENUE PER HA					370.98
Breakeven output price:		0.18			
Breakeven yield:		1,131.10			

Commodity: Maize revised: 6/14/2008
 Production System: Large Scale Mono
 Location: Sisala East -Upper West

PRIVATE BUDGET

<u>INPUTS</u>	Units of Measure/HA	Quantity (in units/HA)	Market Price ¢ Per Unit	Market Value ¢ Per Ha	Market Value ¢ Per Ha
<u>TRADABLES</u>					
Seed Maize	(Kg/Ha)	22.00	0.80	17.60	
NPK	(Kg/Ha)	200.00	0.45	90.00	
SoA	(Kg/Ha)	100.00	0.37	37.00	
Sub-Total (Tradables)					144.60
<u>NON-TRADABLE FACTORS :</u>					
HOUSEHOLD LABOR (NON-WAGE)					
Manual Land Clearing	(Mandays / Ha)	2.00	1.00	2.00	
Planting/sowing	(Mandays / Ha)	2.00	1.00	2.00	
Fertilizer Application 1	(Mandays / Ha)	2.00	1.00	2.00	
Fertilizer Application 2	(Mandays / Ha)	2.00	1.00	2.00	
Weeding/Hoeing 1	(Mandays / Ha)	4.00	1.00	4.00	
Weeding/Hoeing 2	(Mandays / Ha)	2.00	1.00	2.00	
Harvesting & Bagging of C	(Mandays / Ha)	4.00	1.00	4.00	
Harvest dehusking	(Mandays / Ha)	3.00	1.00	3.00	
Harvest shelling	(Mandays / Ha)	3.00	1.00	3.00	
Harvest bagging of Grains	(Mandays / Ha)	3.00	1.00	3.00	
Sub-total					27.00
WAGE LABOR					
Manual Land Clearing	(Mandays / Ha)	7.00	2.00	14.00	
Gathering/burning	(Mandays / Ha)	1.00	2.00	2.00	
Planting/sowing	(Mandays / Ha)	5.00	2.00	10.00	
Fertilizer Application 1	(Mandays / Ha)	3.00	2.00	6.00	
Fertilizer Application 2	(Mandays / Ha)	2.00	2.00	4.00	
Weeding/Hoeing 1	(Mandays / Ha)	6.00	2.00	12.00	
Weeding/Hoeing 2	(Mandays / Ha)	4.00	2.00	8.00	
Harvesting & Bagging of C	(Mandays / Ha)	10.00	1.50	15.00	
Harvest shelling	(Mandays / Ha)	6.00	1.50	9.00	
Harvest bagging of Grains	(Mandays / Ha)	2.00	1.50	3.00	
Sub total:					83.00
<u>OWNED CAPITAL*</u> Real interest rate**: 0.08					
Tools & small implements	<i>Replacement Cost</i>	21.50			
	<i>Life span (yrs)</i>	3.00			
	<i>Annual depreciation</i>	8.38			
	<i>Share of use per HA</i>	0.50			
	Depreciation/HA	4.19	1.00	4.19	

Maize, Large-Scale, Mono-crop, Sisala-East (continued)

	Units of Measure/HA (in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
Machinery and equipment	<i>Replacement Cost</i>	<i>128.00</i>		
	<i>Life span (yrs)</i>	<i>15.00</i>		
	<i>Annual depreciation</i>	<i>15.19</i>		
	<i>Share of use per HA</i>	<i>0.30</i>		
	Depreciation/HA	4.56	1.00	4.56
Working Capital	<u>¢ Per HA</u>	13.31	1.00	13.31
Sub total:				22.06
<u>SERVICES and NON-TRADABLE INTERMEDIATE INPUTS</u>				
Tractor hire plough & Harr Per HA		1.00	50.00	50.00
of which:				
Capital depreciation cost share		0.60		30.00
Labor cost share		0.10		5.00
Tradable (fuel and spares) cost share		0.30		15.00
sub-total (shares must add to one)		1.00		50.00
Other hired services		1.00	38.00	38.00
of which:				
Capital depreciation cost share		0.60		22.80
Labor cost share		0.10		3.80
Tradable (fuel and spares) cost share		0.30		11.40
sub-total (shares must add to one)		1.00		38.00
Non-tradable intermediate inputs		1.00	7.00	7.00
of which:				
Capital depreciation cost share		0.80		5.60
Labor cost share		0.20		1.40
Tradable (fuel and spares) cost share		0.00		0.00
sub-total (shares must add to one)		1.00		7.00
TOTAL COSTS (excluding direct taxes)				371.66
TRADABLE COSTS				171.00
DOMESTIC FACTOR COSTS				200.66
Direct Taxes				0.00
OUTPUT :				
Grain (Kg/Ha)		2,200.00	0.347	763.54
TOTAL REVENUE PER HA				763.54
NET REVENUE PER HA				391.88
Breakeven output price:		0.169		
Breakeven yield:		1,070.86		

Commodity: Rice revised: 6/14/2008
 Production System: Valley Bottom (Large Scale)
 Location: Yendi District, Northern Region

PRIVATE BUDGET

INPUTS	Units of Measure/Ha/ (in units/HA	Quantity	Market Price ¢ Per Unit	Market Value ¢ Per Ha	Market Value ¢ Per Ha
TRADABLES					
Seed Rice	(Kg/Ha)	110.00	0.25	27.50	
NPK	(Kg/Ha)	100.00	0.42	42.00	
SoA	(Kg/Ha)	50.00	0.35	17.50	
Weedicide	(Litre/Ha)	2.50	5.00	12.50	
Sub-Total (Tradables)					99.50
NON-TRADABLE FACTORS :					
HOUSEHOLD LABOR (NON-WAGE)					
Manual Land Clearing	(Mandays / Ha)	5.00	1.00	5.00	
Ploughing	(Mandays / Ha)	2.00	0.80	1.60	
Planting	(Mandays / Ha)	2.00	1.00	2.00	
Fertilizer Application 1	(Mandays / Ha)	2.00	1.00	2.00	
Fertilizer Application 2	(Mandays / Ha)	2.00	1.00	2.00	
Gather and Thresh	(Mandays / Ha)	10.00	1.50	15.00	
Winnowing Manual	(Mandays / Ha)	12.00	1.00	12.00	
Sewing Bags	(Mandays / Ha)	2.00	0.40	0.80	
Transport	(Mandays / Ha)	2.00	1.50	3.00	
Sub-total					43.40
WAGE LABOR					
Manual Land Clearing	(Mandays / Ha)	15.00	2.00	30.00	
Non-Selective Weedici	(Mandays / Ha)	4.00	2.00	8.00	
Planting	(Mandays / Ha)	4.00	1.50	6.00	
Fertilizer Application 1	(Mandays / Ha)	5.00	1.50	7.50	
Fertilizer Application 2	(Mandays / Ha)	4.00	1.50	6.00	
Weeding/Hoeing 1	(Mandays / Ha)	25.00	1.50	37.50	
Harvesting	(Mandays / Ha)	14.00	2.50	35.00	
Gather and Thresh	(Mandays / Ha)	8.00	2.00	16.00	
Winnowing Manual	(Mandays / Ha)	5.00	1.50	7.50	
Transport	(Mandays / Ha)	1.00	2.00	2.00	
Sub total:					155.50
OWNED CAPITAL* Real interest rate**		0.08			
Tools & small impleme	Replacement Cost	15.00			
	Life span (yrs)	3.00			
	Annual depreciation	5.85			
	Share of use per HA	0.50			
	Depreciation/HA	2.92	1.00	2.92	

Rice, Large-Scale, valley bottom, Yendi (continued)

	Units of Measure/Ha (in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
Machinery and equipm	<i>Replacement Cost</i>	1,137.30		
	<i>Life span (yrs)</i>	15.00		
	<i>Annual depreciation</i>	134.91		
	<i>Share of use per HA</i>	0.30		
	Depreciation/HA	40.47	1.00	40.47
Working Capital	<u>¢ Per HA</u>	13.06	1.00	13.06
	(charged to 50% of cash expenses)			
Sub total:				56.45
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS				
<u>Tractor Hire</u>		1.00	55.00	55.00
of which:				
Capital depreciation cost share		0.60		33.00
Labor cost share		0.10		5.50
Tradable (fuel and spares) cost share		0.30		16.50
sub-total (shares must add to one)		1.00		55.00
<u>Combine Hire (for Threshing)</u>		1.00	6.50	6.50
of which:				
Capital depreciation cost share		0.60		3.90
Labor cost share		0.10		0.65
Tradable (fuel and spares) cost share		0.30		1.95
sub-total (shares must add to one)		1.00		6.50
<u>Transport Hire</u>		1.00	7.00	7.00
of which:				
Capital depreciation cost share		0.60		4.20
Labor cost share		0.10		0.70
Tradable (fuel and spares) cost share		0.30		2.10
sub-total (shares must add to one)		1.00		7.00
TOTAL COSTS (excluding direct taxes)				423.35
TRADABLE COSTS				120.05
DOMESTIC FACTOR COSTS				303.30
Direct Taxes				0.00
OUTPUT :				
Paddy (Kg/Ha)	2,500.00	0.235		587.30
TOTAL REVENUE PER HA				587.30
NET REVENUE PER HA				163.95
Breakeven output price	0.169			
Breakeven yield:	1,802.10			

Commodity: Rice revised: 6/14/2008
 Production System: Valley Bottom (Small Scale)
 Location: Yendi District, Northern Region
 Condition: Erratic (Drought/Flood)

PRIVATE BUDGET

	Quantity	Market Price	Market Value	Market Value
<u>INPUTS</u>	Units of Measure/Ha (in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
<u>TRADABLES</u>				
Seed Rice	(Kg/Ha)	110.00	0.25	27.50
NPK	(Kg/Ha)	100.00	0.44	44.00
SoA	(Kg/Ha)	50.00	0.40	20.00
Weedicide	(Litre/Ha)	2.50	6.00	15.00
Sub-Total (Tradables)				106.50
<u>NON-TRADABLE FACTORS :</u>				
HOUSEHOLD LABOR (NON-WAGE)				
Manual Land Clearing	(Mandays / Ha)	20.00	0.74	14.80
Non-Selective Weedici	(Mandays / Ha)	1.00	1.00	1.00
Planting	(Mandays / Ha)	6.00	1.50	9.00
Fertilizer Application 1	(Mandays / Ha)	3.00	1.00	3.00
Fertilizer Application 2	(Mandays / Ha)	3.00	1.00	3.00
Weeding/Hoeing 1	(Mandays / Ha)	8.00	1.50	12.00
Harvesting	(Mandays / Ha)	10.00	1.50	15.00
Gather and Thresh	(Mandays / Ha)	7.00	1.00	7.00
Winnowing Manual	(Mandays / Ha)	10.00	1.00	10.00
Sewing Bags	(Mandays / Ha)	1.00	1.00	1.00
Sub-total				75.80
WAGE LABOR				
Manual Land Clearing	(Mandays / Ha)	4.00	1.50	6.00
Non-Selective Weedici	(Mandays / Ha)	1.00	9.00	9.00
Planting	(Mandays / Ha)	15.00	2.00	30.00
Weeding/Hoeing 1	(Mandays / Ha)	24.00	2.00	48.00
Harvesting	(Mandays / Ha)	20.00	2.00	40.00
Winnowing Manual	(Mandays / Ha)	10.00	2.00	20.00
Sewing Bags	(Mandays / Ha)	1.00	2.00	2.00
Transport	(Mandays / Ha)	1.00	2.50	2.50
Sub total:				157.50
<u>OWNED CAPITAL* Real interest rate** 0.08</u>				
Tools & small implem	Replacement Cost	29.50		
	Life span (yrs)	3.00		
	Annual depreciation	11.50		
	Share of use per HA	0.50		
	Depreciation/HA	5.75	1.00	5.75

Rice, Small-Scale Valley Bottom, Yendi (continued)

	Units of Measure/Ha (in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
Machinery and equipm	<i>Replacement Cost</i>			
	<i>Life span (yrs)</i>	<i>0.00</i>		
	<i>Annual depreciation</i>	<i>0.00</i>		
	<i>Share of use per HA</i>	<i>0.00</i>		
	Depreciation/HA	0.00	1.00	0.00
Working Capital	<u>¢ Per HA</u>	12.96	1.00	12.96
Sub total:				18.71
Land	Ha/Ha	1.00	16.00	16.00
<u>SERVICES and NON-TRADABLE INTERMEDIATE INPUTS</u>				
Tractor Hire		1.00	50.00	50.00
of which:				
Capital depreciation cost share		0.60		30.00
Labor cost share		0.10		5.00
Tradable (fuel and spares) cost share		0.30		15.00
sub-total (shares must add to one)		1.00		50.00
Transport Hire		1.00	9.00	9.00
of which:				
Capital depreciation cost share		0.60		5.40
Labor cost share		0.10		0.90
Tradable (fuel and spares) cost share		0.30		2.70
sub-total (shares must add to one)		1.00		9.00
TOTAL COSTS (excluding direct taxes)				417.51
TRADABLE COSTS				124.20
DOMESTIC FACTOR COSTS				293.31
Direct Taxes				0.00
OUTPUT :				
Paddy	(Kg/Ha)	2,200.00	0.236	520.10
TOTAL REVENUE PER HA				520.10
NET REVENUE PER HA				102.59
Breakeven output price		0.190	at base yield	
Breakeven yield:		1,766.04	at base price	

Commodity: Rice revised: 6/14/2008
 Production System: Irrigated (Small Scale)
 Location: Tolon-Kumbungu District, Northern Region
 Condition: Erratic (Drought/Flood)

PRIVATE BUDGET

	Quantity	Market Price	Market Value	Market Value
INPUTS	Units of Measure/Ha (in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
TRADABLES				
Seed Rice	(Kg/Ha)	100.00	0.40	40.00
NPK	(Kg/Ha)	250.00	0.42	105.00
SoA	(Kg/Ha)	125.00	0.34	42.50
Herbicide 1	(Litre/Ha)	4.00	7.00	28.00
	Sub-Total (Tradables)			215.50
NON-TRADABLE FACTORS :				
HOUSEHOLD LABOR (NON-WAGE)				
Manual Land Clearing	(Mandays / Ha)	3.00	1.50	4.50
Non-Selective Weeding	(Mandays / Ha)	10.00	1.00	10.00
Planting	(Mandays / Ha)	20.00	1.50	30.00
Fertilizer Application 1	(Mandays / Ha)	6.00	1.50	9.00
Fertilizer Application 2	(Mandays / Ha)	6.00	1.50	9.00
Weeding/Hoeing 1	(Mandays / Ha)	40.00	1.00	40.00
Bird Scaring	(Mandays / Ha)	40.00	1.00	40.00
Harvesting	(Mandays / Ha)	30.00	1.50	45.00
Gather and Thresh	(Mandays / Ha)	30.00	1.50	45.00
Transport	(Mandays / Ha)	20.00	1.00	20.00
Other	(Mandays / Ha)			0.00
	Sub-total			252.50
WAGE LABOR				
Weeding/Hoeing 1	(Mandays / Ha)	30.00	2.00	60.00
Weeding/Hoeing 2	(Mandays / Ha)	20.00	2.00	40.00
Herbicide application 1	(Mandays / Ha)	1.00	8.00	8.00
Bird Scaring	(Mandays / Ha)	20.00	2.00	40.00
Harvesting	(Mandays / Ha)	25.00	2.00	50.00
Gather and Thresh	(Mandays / Ha)	25.00	2.50	62.50
Filling & Sewing Bags	(Mandays / Ha)	4.00	2.00	8.00
	Sub total:			268.50
OWNED CAPITAL* Real interest rate**:		0.08		
Tools & small implements	Replacement Cost	78.00		
	Life span (yrs)	3.00		
	Annual depreciation	30.40		
	Share of use per HA	0.50		
	Depreciation/HA	15.20	1.00	15.20

Rice, Small-Scale, Irrigated Tolon Kumbugu(continued)

	Units of Measure/Ha/ (in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
Working Capital	¢ Per HA	23.37	1.00	23.37
	(charged to 50% of cash expenses)			
Sub total:				38.58
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS				
Irrigation Service Char, Per HA		1.00	22.50	22.50
of which:				
Capital depreciation cost share		0.80		18.00
Labor cost share		0.20		4.50
Tradable (fuel and spares) cost share				0.00
sub-total (shares must add to one)		1.00		22.50
Tractor Hire (1.00	60.00	60.00
of which:				
Capital depreciation cost share		0.60		36.00
Labor cost share		0.10		6.00
Tradable (fuel and spares) cost share		0.30		18.00
sub-total (shares must add to one)		1.00		60.00
Non - Tradable Intermediate Inputs		1.00	17.50	17.50
of which:				
Capital depreciation cost share		0.80		14.00
Labor cost share		0.20		3.50
Tradable (fuel and spares) cost share				0.00
sub-total (shares must add to one)		1.00		17.50
Transport Hire		1.00	50.00	50.00
of which:				
Capital depreciation cost share		0.60		30.00
Labor cost share		0.10		5.00
Tradable (fuel and spares) cost share		0.30		15.00
sub-total (shares must add to one)		1.00		50.00
TOTAL COSTS (excluding direct taxes)				907.58
TRADABLE COSTS				248.50
DOMESTIC FACTOR COSTS				659.08
Direct Taxes				0.00
OUTPUT :				
Paddy (Kg/Ha)	4,300.00	0.24	1,053.15	
TOTAL REVENUE PER HA				1,053.15
NET REVENUE PER HA				145.57
Breakeven output price		0.21	at base yield	
Breakeven yield:	3,705.63	at base price		

Commodity: Rice revised: 6/14/2008
 Production System: Valley Bottom (Large Scale)
 Location: Tolon-Kumbungu District, Northern Region
 Condition: Erratic (Drought/Flood)

PRIVATE BUDGET

INPUTS	Units of Measure/Ha/ (in units/HA	Quantity	Market Price	Market Value	Market Value
		(in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
TRADABLES					
Seed Rice	(Kg/Ha)	80.00	0.30	24.00	
FERTILIZER					
NPK	(Kg/Ha)	200.00	0.45	90.00	
SoA	(Kg/Ha)	100.00	0.36	36.00	
AGROCHEMICALS					
Weedicide	(Litre/Ha)	3.00	8.50	25.50	
Herbicide 1	(Litre/Ha)	2.00	6.50	13.00	
	Sub-Total (Tradables)				188.50
NON-TRADABLE FACTORS :					
HOUSEHOLD LABOR (NON-WAGE)					
Filling Bags	(Mandays / Ha)	5.00	2.00	10.00	
Sewing Bags	(Mandays / Ha)	5.00	2.00	10.00	
Other	(Mandays / Ha)			0.00	
	Sub-total				20.00
WAGE LABOR					
Non-Selective Weedici	(Mandays / Ha)	4.00	2.50	10.00	
Planting	(Mandays / Ha)	8.00	2.00	16.00	
Fertilizer Application 1	(Mandays / Ha)	8.00	2.00	16.00	
Fertilizer Application 2	(Mandays / Ha)	8.00	2.00	16.00	
Weeding/Hoeing 1	(Mandays / Ha)	12.00	2.00	24.00	
Weeding/Hoeing 2	(Mandays / Ha)	12.00	2.00	24.00	
Herbicide application 1	(Mandays / Ha)	2.00	7.50	15.00	
Harvesting	(Mandays / Ha)	20.00	2.00	40.00	
Gather and Thresh	(Mandays / Ha)	15.00	1.50	22.50	
Winnowing Manual	(Mandays / Ha)	10.00	1.50	15.00	
Winnowing Machine	(Mandays / Ha)			0.00	
Filling Bags	(Mandays / Ha)	2.00	2.00	4.00	
Sewing Bags	(Mandays / Ha)	2.00	2.00	4.00	
Other	(Mandays / Ha)			0.00	
	Sub total:				206.50

Rice, Large-Scale, Valley Bottom Tolon Kumbugu(continued)

	Units of Measure/Ha/	(in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
OWNED CAPITAL*	Real interest rate**:		0.08		
Tools & small implem	Replacement Cost		25.29		
	Life span (yrs)		3.00		
	Annual depreciation		9.86		
	Share of use per HA		0.50		
	Depreciation/HA		4.93	1.00	4.93
Working Capital	¢ Per HA		18.77	1.00	18.77
Sub total:					23.70
Land	Ha/Ha		1.00	42.50	42.50
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS					
<u>Tractor Hire</u>			1.00	60.00	60.00
of which:					
Capital depreciation cost share			0.60		36.00
Labor cost share			0.10		6.00
Tradable (fuel and spares) cost share			0.30		18.00
sub-total (shares must add to one)			1.00		60.00
<u>Non - Tradable Intermediate Inputs</u>			1.00	6.00	6.00
of which:					
Capital depreciation cost share			0.80		4.80
Labor cost share			0.20		1.20
Tradable (fuel and spares) cost share					0.00
sub-total (shares must add to one)			1.00		6.00
<u>Transport Hire</u>			1.00	10.00	10.00
of which:					
Capital depreciation cost share			0.60		6.00
Labor cost share			0.10		1.00
Tradable (fuel and spares) cost share			0.30		3.00
sub-total (shares must add to one)			1.00		10.00
TOTAL COSTS (excluding direct taxes)					508.70
TRADABLE COSTS					209.50
DOMESTIC FACTOR COSTS					299.20
Direct Taxes					0.00
OUTPUT :					
Paddy	(Kg/Ha)	2,800.00	0.24	663.38	
Other	(Kg/Ha)			0.00	
Other	(kg/Ha)			0.00	
TOTAL REVENUE PER HA					663.38
NET REVENUE PER HA					154.68
Breakeven output price		0.18			
Breakeven yield:		2,147.14			

Commodity: Rice revised: 6/14/2008
 Production System: Valley Bottom (Small Scale)
 Location: Tolon-Kumbungu District, Northern Region
 Condition: Erratic (Drought/Flood)

PRIVATE BUDGET

INPUTS	Quantity Units of Measure/F (in units/HA	Market Price ¢ Per Unit	Market Value ¢ Per Ha	Market Value ¢ Per Ha
TRADABLES				
Seed Rice	(Kg/Ha)	90.00	0.30	27.00
FERTILIZER				
NPK	(Kg/Ha)	200.00	0.48	96.00
SoA	(Kg/Ha)	100.00	0.38	38.00
AGROCHEMICALS				
Weedicide	(Litre/Ha)	3.00	7.00	21.00
Other				0.00
Sub-Total (Tradables)				182.00
NON-TRADABLE FACTORS :				
HOUSEHOLD LABOR (NO CASH-WAGE)				
Manual Land Clearing	(Mandays / Ha)	10.00	1.50	15.00
Ploughing	(Mandays / Ha)			0.00
Harrowing	(Mandays / Ha)	20.00	1.20	24.00
Non-Selective Weedici	(Mandays / Ha)	2.00	1.40	2.80
Planting	(Mandays / Ha)	40.00	1.00	40.00
Fertilizer Application 1	(Mandays / Ha)	7.00	1.00	7.00
Fertilizer Application 2	(Mandays / Ha)	5.00	1.00	5.00
Weeding/Hoeing 1	(Mandays / Ha)	10.00	1.00	10.00
Weeding/Hoeing 2	(Mandays / Ha)	10.00	1.00	10.00
Bird Scaring	(Mandays / Ha)	17.00	1.00	17.00
Harvesting	(Mandays / Ha)	30.00	1.50	45.00
Gather and Thresh	(Mandays / Ha)	30.00	1.50	45.00
Winnowing Manual	(Mandays / Ha)	20.00	1.50	30.00
Transport	(Mandays / Ha)	6.00	1.00	6.00
Sub-total				256.80
WAGE LABOR				
Other	(Mandays / Ha)			0.00
Sub total:				0.00

Rice, Small-Scale Valley Bottom Tolon Kumbugu(continued)

	Units of Measure/F	(in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
OWNED CAPITAL*	Real interest rate**		0.08		
Tools & small implem	Replacement Cost		103.50		
	Life span (yrs)		3.00		
	Annual depreciatio		40.34		
	Share of use per H		0.50		
	Depreciation/HA		20.17	1.00	20.17
Working Capital	¢ Per HA		9.16	1.00	9.16
(Charged on half the value of all cash expenses)					
Sub total:					29.33
Land	Ha/Ha		1.00	42.50	42.50
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS					
Tractor Hire			1.00	40.00	40.00
of which:					
Capital depreciation cost share			0.60		24.00
Labor cost share			0.10		4.00
Tradable (fuel and spares) cost share			0.30		12.00
sub-total (shares must add to one)			1.00		40.00
TOTAL COSTS (excluding direct taxes)					508.13
TRADABLE COSTS					194.00
DOMESTIC FACTOR COSTS (Capital and Labor)+A107					314.13
Direct Taxes					0.00
OUTPUT :					
Paddy	(Kg/Ha)	3,000.00		0.24	708.97
Other	(Kg/Ha)				0.00
Other	(kg/Ha)				0.00
TOTAL REVENUE PER HA					708.97
NET REVENUE PER HA					200.84

Breakeven output price 0.17
 Breakeven yield: 2,150.14

Commodity: Rice revised: 6/14/2008
 Production System: Upland (Small Scale)
 Location: Tolon-Kumbungu District, Northern Region
 Condition: Erratic (Drought/Flood)

PRIVATE BUDGET

INPUTS	Units of Measure	Quantity	Market Price	Market Value	Market Value
		(in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha

TRADABLES

Seed Rice	(Kg/Ha)	70.00	0.30	21.00	
FERTILIZER					
NPK	(Kg/Ha)	200.00	0.44	88.00	
SoA	(Kg/Ha)	100.00	0.34	34.00	
AGROCHEMICALS					
Weedicide	(Litre/Ha)	2.00	5.50	11.00	
Herbicide 1	(Litre/Ha)	2.00	4.50	9.00	
Sub-Total (Tradables)					163.00

NON-TRADABLE FACTORS :

HOUSEHOLD LABOR (NON-WAGE)

Manual Land Clearing	(Mandays / Ha)	6.00	1.50	9.00	
Ploughing	(Mandays / Ha)	4.00	1.50	6.00	
Harrowing	(Mandays / Ha)	4.00	1.50	6.00	
Planting	(Mandays / Ha)	6.00	1.50	9.00	
Fertilizer Application 1	(Mandays / Ha)	2.00	1.00	2.00	
Fertilizer Application 2	(Mandays / Ha)	2.00	1.00	2.00	
Weeding/Hoeing 1	(Mandays / Ha)	6.00	1.50	9.00	
Weeding/Hoeing 2	(Mandays / Ha)	10.00	1.00	10.00	
Harvesting	(Mandays / Ha)	12.00	1.00	12.00	
Gather and Thresh	(Mandays / Ha)	8.00	1.50	12.00	
Winnowing Manual	(Mandays / Ha)	4.00	1.00	4.00	
Winnowing Machine	(Mandays / Ha)			0.00	
Filling Bags	(Mandays / Ha)	2.00	0.50	1.00	
Sewing Bags	(Mandays / Ha)	1.00	1.00	1.00	
Transport	(Mandays / Ha)	4.00	2.00	8.00	
Sub-total					91.00

Rice, Small-Scale Upland Tolon Kumbugu(continued)

	Units of Measure	(in units/HA	¢ Per Unit	¢ Per Ha	¢ Per Ha
WAGE LABOR					
Manual Land Clearing	(Mandays / Ha)	10.00	1.50	15.00	
Ploughing	(Mandays / Ha)	10.00	2.00	20.00	
Harrowing	(Mandays / Ha)	13.00	1.50	19.50	
Non-Selective Weeding	(Mandays / Ha)	2.00	2.50	5.00	
Planting	(Mandays / Ha)	10.00	2.00	20.00	
Fertilizer Application 1	(Mandays / Ha)	4.00	1.20	4.80	
Fertilizer Application 2	(Mandays / Ha)	3.00	1.20	3.60	
Weeding/Hoeing 1	(Mandays / Ha)	9.00	1.50	13.50	
Weeding/Hoeing 2	(Mandays / Ha)	8.00	1.50	12.00	
Harvesting	(Mandays / Ha)	13.00	2.50	32.50	
Gather and Thresh	(Mandays / Ha)	15.00	1.50	22.50	
Winnowing Manual	(Mandays / Ha)	6.00	1.50	9.00	
Sub total:					177.40
OWNED CAPITAL*	Real interest rate**	0.08			
Tools & small implements	Replacement Cost	24.30			
	Life span (yrs)	3.00			
	Annual depreciation	9.47			
	Share of use per Ha	0.50			
	Depreciation/HA	4.74	1.00	4.74	
Working Capital	¢ Per HA	14.04	1.00	14.04	
	(Charged at interest rate to half value of to all cash expenses)				
Sub total:					18.78
Land	Ha/Ha	1.00	30.00	30.00	
SERVICES and NON-TRADABLE INTERMEDIATE INPUTS					
Misc.				0.00	
TOTAL COSTS (excluding direct taxes)					450.18
TRADABLE COSTS					163.00
DOMESTIC FACTOR COSTS					287.18
Direct Taxes					0.00
OUTPUT :					
Paddy	(Kg/Ha)	2,600.00	0.24	615.99	
Other	(Kg/Ha)			0.00	
Other	(kg/Ha)			0.00	
TOTAL REVENUE PER HA					615.99
NET REVENUE PER HA					165.81
Breakeven output price		0.17 at yield in budget.			
Breakeven yield:		1,900 at prices in budget.			