

## Analysis of crop production inside the farm

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### 1.- Rice

Since the beginning of its colonization rice has been one of the crops best adapted to the area. According to the pre-feasibility study it can be observed that the mayor part of agricultural ground inside the farms is occupied by rice production.

The preparation of the agricultural terrain inside the farm for cultivating rice in the colonization area is realized by the cutting and burning of forests (high woodland and fallows of secondary forest). The production cycle or mode of production per hectare in general shows the following structure:

High woodland – Rice - Fallow (4 years) - Rice – Fallow (7 years) – Rice – Fallow (9/10years) – Rice.

Under this system various factors can be observed that influence the determination of surface dedicated to rice inside the farm. On average every family prepares a surface of 3,5 ha per year. These hectares are divided between fallows and primary forest in order to secure the production, taking into account that in general the production of rice results in better harvests in soils of converted primary forest.

The evaluation of the suitability of fallow for conversion into agricultural land depends on a process of local knowledge. This knowledge is based on the groundcover of the fallow which has to be free of indicator weeds like bitter pastures and climbers which in general reflect low soil fertility. The absence of these weeds in the fallow is a major guarantee for the farmer about the reappearance and invasion of those weeds once the farmer prepares the land, which influences to a great extend the labour demand.

The inversion of labor and the production obtained per hectare has been monitored in 14 farms in the area with different initial groundcovers. The obtained data have been summarized and show the following results:

#### Cost/benefits of rice production in converted primary forest (Bs/ha)

	Labour demand (Days/ha)		Labour costs for contracted labour	
	Own	Contracted	Price/day	Total/ha (Bs)
Preparation of the terrain	19	6	50	300,00
Sowing of rice	2	1	35	35,00
Cleaning	5	0	35	-
Harvesting	24	15	35	525,00
Drying and separating	15		35	-
Subtotal m.o.	65	22		860,00

Processing costs	Unit	Quantity	Price per unit	Total/ha
Transport	0	29	4,5	130,50
Threshing and peeling	0	29	10	290,00

Subtotal				420,50
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Supplies	Unit	Quantity	Price per unit	Total/ha
Seed	arroba	1,5	30	45,00
Tools		1	120	120,00
Pesticides, herbicides	lts	1	140	140,00
Subtotal supplies				305,00

<b>Total costs</b>				<b>1.585,50</b>
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Revenues per ha	unit	amount	price per unit	Total/ha
Production for sale	qq	20	120	2.400,00
Production for subsistence	qq	9	120	1.080,00
Total Revenues				3.480,00

<b>Net Revenues</b>				<b>1.894,50</b>
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Income per day for farmer	29,15 Bs
Income per day without subsistence	12,53 Bs

### Cost/benefits of rice production in fallow land

	Labour demand (Days/ha)		Labour costs for contracted labour	
	Own	Contracted	Price/day	Total/ha (Bs)
Labor				
Preparation of the terrain	12	3	50	150,00
Sowing of rice	2	0	35	-
Cleaning	5	0	35	-
Harvesting	18	7	35	245,00
Drying and separating	15		35	-
Subtotal m.o.	52	10		395,00

Processing costs	Unit	Quantity	Price per unit	Total/ha
Transport		20	4,5	90,00
Threshing and peeling		20	10	200,00
Subtotal				290,00

Supplies	Unit	Quantity	Price per unit	Total/ha
Seed	arroba	1,5	30	45,00
Tools		1	60	60,00
Pesticides, herbicides	lts	1	200	200,00
Subtotal supplies				305,00

<b>Total costs</b>				<b>990,00</b>
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Revenues per ha	unit	amount	price per unit	Total/ha
Production for sale	qq	14	120	1.680,00
Production for subsistence	qq	6	120	720,00
Total Revenues				2.400,00

<b>Net Revenues</b>				<b>1.410,00</b>
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Income per day for farmer	27,12 Bs
Income per day without subsistence	13,27 Bs

## 2.- Cattle

The cattle management of rural families on the farms in the area shows a lot of variety in technical terms. According to the study realized by the DED and PRISA-Bolivia in the area in 2007, they have differentiated between three different styles developed in the area which in theory can generate economic benefits, exposed in the table below.

Nevertheless it is worthwhile to mention that in numbers presented in the table below are indicative, since a big variety of socio-economic and cultural as well as biophysical and climatological factors, influence the final production level.

<b>Inversiones</b>	<b>Criollo propio</b>			<b>contratado</b>			<b>Criollo mejorado propio</b>			<b>contratado</b>			<b>Sergio Chungara propio</b>			<b>contratado</b>			<b>Max Nina propio</b>			<b>contratado</b>						
	M	H	precio	total	M	H	precio	total	M	H	precio	total	M	H	precio	total	M	H	precio	total	M	H	precio	total				
<b>Mano obra (jornal)</b>																												
Establecimiento potreros				0				0				0				0				0				0				0
siembra con arroz		2	35									35				35				35				35				35
quema			35			2	35					35				35				35				35				35
limpieza inicial			35			2	5	35				175		0	9	35				315				315		9	35	315
cercado	0	0	0	35				14				35				490				14				35				490
<b>Subtotal m.o.</b>	0	2			0	4	19	665	0	0	23	805	0	0	23		0	0	23		0	0	23		0	0	23	
<b>Insumos</b>	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total
semilla	kg	0.5	80	40	kg	1	80	80	kg	1	80	80	kg	1	80	80	kg	1	80	80	kg	1	80	80	kg	1	80	80
postes				0			80	5			80	400			80	10			80	800			80	10			80	800
alambre				0		4	240	960		4	240	960		4	240	960		4	240	960		4	240	960		4	240	960
<b>Ganado</b>	kg	0	8.5	0	kg		8.5	0	kg		8.5	0	kg		8.5	0	kg		8.5	0	kg		8.5	0	kg		8.5	0
<b>Brete</b>				0				0		1	2000	2000		1	2000	2000		1	3000	3000		1	3000	3000		1	3000	3000
<b>Total inversiones / ha</b>				<b>40</b>				<b>2105</b>				<b>4645</b>				<b>5645</b>				<b>5645</b>				<b>5645</b>				<b>5645</b>
<b>Costos (mano obra)</b>	propio	contratado			propio	contratado			propio	contratado			propio	contratado			propio	contratado			propio	contratado			propio	contratado		
Mantenimiento/ha				0				0				0				0				0				0				0
limpieza		20	35			40	35			10	10	35		5	35			5	35			5	35			5	35	
quema		2	35			1	35					35				35				35				35				35
cercas			35			4	35					35				35				35				35				35
<b>Cuidado animal</b>				0				0				0				0				0				0				0
rotación potreros		45	35			13	35			13	35			13	35			13	35			13	35			13	35	
forrajes				0				0				0				0				0				0				0
desparasitación, vit sal y suplementos		2	35			4	35			4	35			6	35					35				35				35
<b>Subtotal m.o</b>	45	24			13	53			33			350	18			0	18			0	18			0	18			0
<b>Insumos</b>	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total
deparasitantes y vit		3	25	75		4.5	25	113		8	25	200		8	25	200		8	25	200		8	25	200		8	25	200
medicinas		1	20	20		1.5	30	45		2	30	60		2	30	60		2	30	60		2	30	60		2	30	60
<b>Subtotal insumos</b>				95				158				260				260				260				260				260
<b>Total costos</b>				<b>95</b>				<b>158</b>				<b>610</b>				<b>610</b>				<b>610</b>				<b>610</b>				<b>610</b>
<b>Ingresos / producción</b>	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total	unidad	cant.	precio	total
producción de crías/año/ha			0.25				0.33				0.5				0.5				0.5				0.5				0.5	
producción de carne/año/ha	kg	215	8.5	457	kg	215	8.5	609	kg	215	8.5	914	kg	215	8.5	914	kg	215	8.5	914	kg	215	8.5	914	kg	215	8.5	914
alquiler de potreros/ha	ha		0	0	ha		0	0	ha		0	0	ha		0	0	ha		0	0	ha		0	0	ha		0	0
<b>Total vendido</b>				<b>457</b>				<b>609</b>				<b>914</b>				<b>914</b>				<b>914</b>				<b>914</b>				<b>914</b>
<b>Ingresos / jornal</b>				<b>7</b>				<b>9</b>				<b>9</b>				<b>28</b>				<b>28</b>				<b>28</b>				<b>32</b>
<b>Margen bruto (Bs / ha / año)</b>				<b>429</b>				<b>346</b>				<b>297</b>				<b>297</b>				<b>297</b>				<b>297</b>				<b>581</b>

## 3. Agro forestry con Cacao:

According to diagnostic studies of the cacao crop in the area of influence of the PNANMI Madidi realized by IAS (International Andean Service) in 2004, the implementation of at least 400 has of cacao specifically for this area is estimated. The cacao production in the colonization area of Madidi NP and the reserve Pilon Lajas has been promoted by various institutions and development projects since the year 2000.

Taking this data in mind, the area offers a major potential for cacao production in the future. Between the factors that have influenced this preference for cacao production by the beneficiary families and the institutions is the presence of the Central of the Cooperatives, CEIBO Ltda in the cacao producing region in High Beni, situated between 150 and 200 Km. of the project area. This cooperation at this moment (May

2007) buys conventional cacao in dry seeds at an average price of 600 Bs. (62.50 \$US) per quintal (45kg).

According to the documentation and the systematization of the agro forestry parcels implemented by the PRISA project, the association of crops between cacao and banana, leguminous crop cover and forestry species and fruit trees in a agro forestry production system has been proved to be more viable in economic terms, with respect to commercial production and to invested labor. Based on the generated experiences in practice by PRISA and the participating farmers a technique of an agro forestry production system has been developed for this project. The production combines crops with immediate income like rice and maize with crops with better groundcover like banana, cacao and timber, which improve and protect the soil.

The technical proposal based on the agro forestry production, developed by PRISA in the area, project the following economic impact for the farmer<sup>1</sup>:

**Table 2. Economic results of the SAF developed in the area (in Bs.)**

Year	Gross Income					Labor demand (days/year)			Income per day	
	Cacao		Banana	Rice	Timber	total	Max	Min		Average
	Max.	Min.								
1	-	-	-	2.640	-	2.640	111	111	111	24
2	-	-	5.400	-	-	5.400	98	28	63	86
3	-	-	4.500	-	-	4.500	98	35	67	68
4	1.200	600	2.200	-	-	3.100	100	31	66	47
5	1.200	600	-	-	-	900	108	31	70	13
6	3.600	1.800	-	-	-	2.700	108	22	75	42
7	3.600	1.800	-	-	-	2.700	82	22	52	52
8	4.800	2.400	-	-	-	3.600	82	25	54	67
9	4.800	2.400	-	-	-	3.600	82	25	54	67
10	7.200	3.600	-	-	-	5.400	82	25	54	101
11	7.200	3.600	-	-	-	5.400	82	25	54	101
12	7.200	3.600	-	-	-	5.400	82	25	54	101
13	7.200	3.600	-	-	-	5.400	82	25	54	101
14	7.200	3.600	-	-	-	5.400	82	25	54	101
15	7.200	3.600	-	-	-	5.400	82	25	54	101
16	7.200	3.600	-	-	-	5.400	82	25	54	101
17	7.200	3.600	-	-	-	5.400	82	25	54	101
18	7.200	3.600	-	-	-	5.400	82	25	54	101
19	7.200	3.600	-	-	-	5.400	82	25	54	101
20	6.000	3.000	-	-	-	4.500	82	25	54	84
21	6.000	3.000	-	-	-	4.500	82	25	54	84
22	4.800	2.400	-	-	-	3.600	82	25	54	67
23	4.800	2.400	-	-	-	3.600	82	25	54	67
24	4.800	2.400	-	-	-	3.600	82	25	54	67
25	4.800	2.400	-	-	8.000	11.600	82	25	54	217

Own Source