



CARE INTERNATIONAL AU MALI

BP. 1766
Bamako, Mali

Tél. (223) 24 22 62
Fax (223) 24 75 32

24 91 37

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Subject: Supplementary data for the DAD project CY02 report.
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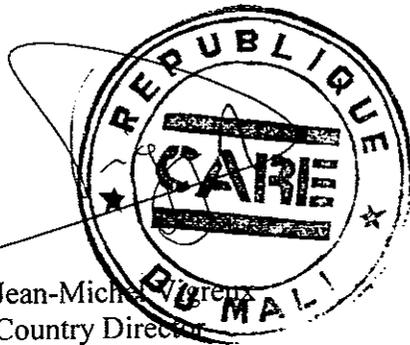
Dear Sir, Madam,

When we submitted our last annual report of the Delta Agricultural Project in January 2003, some of the data related to the rice production and yields were not yet available, as the rice fields had not been harvested.

You will find attached a supplement to our annual report that provides the harvest-related data.

Please do not hesitate to contact us, should you need clarification or additional information.

Best regards,



Jean-Michel
Country Director

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CARE International in Mali

Contacts:

Jean-Michel Vigreux, Country Director, jmvigreux@caremali.org

John Uniack Davis, Assistant Country Director/Program, jdavis@caremali.org

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Delta Agricultural Development Project (DAD) Harvest indicators for the 2002-2003 rice production campaign

1. Introduction

This report completes the DAD project 2002 report by providing data that were not yet available at the time of reporting.

The rice production campaign 2002-2003 was very poor in the Djenné Cercle as the annual report anticipated. Only 15% of the surface area normally cultivated got into production. This resulted from an exceptional combination of low flood levels on the rivers and low rainfall during the growing season. The area has had good production in low rainfall years and in low flood level years, but the combination of the two negative factors is devastating to this zone. The plains of Pondori and Djonké were the only ones to produce rice last year.

2. Rice production

2.1. Plain of Pondori

2.1.1. Context

The various rice varieties grown are the following: Kao ; DM16 ; Gambiaka and two local varieties, « Soumou » and « Boussa-Diame ». The water conditions were poor.

The members of the measurement committees and the project team placed yield squares¹ in 24 of the 25 plots planned, distributed as follows: Koba (4), Payaba (5), Kossouma (5) and Djenné (10). In total, 96 yield squares -- four squares per plot -- have been placed, each of them covering 25 square meters.

¹ Yield squares are a standard tool of rice production measurement--randomly placed frames are used to estimate total production in a given area.

2.1.2. Results

Village	Farmer's name	Variety	Production per square, kg					Yield, kg/ha
			C1	C2	C3	C4	average	
Kossouma	Siaka Karakon	Khao	3,3	2,7	2,6	2,5	2,77	1,108
	Boukadary Kokoïna	Khao	3	2,5	2,2	1	2,18	872
	Bakary karakon	Khao	4,5	3,5	3	2,2	3,37	1,348
	Bakary Diarra	Khao	6	5	4	2,5	4,37	1,748
Koba	Bougadary Traoré	Khao	4	3	2	1	2,5	1,000
	Kah Diarra	Khao	5	4	3	2	3,5	1,400
Djenné	Adama Pléa	Khao	5	3	1	1	2,5	1,000
	Beïdy Bocoum	Khao	2	2,5	1,7	1,5	1,9	724
	Mama Traoré	Khao	2,7	2	1,5	1,5	1,8	724
	El Hadji Kontao	Khao	2,5	2,2	1,5	1	1,8	748
	Allaye Cissé	Khao	3	2,5	1	1,5	2	800
Average yield								1,043

Among the 96 yield squares, only 44 squares were harvested and led to an average yield of 1,043 kg/ha in the plain of Pondori. The khao gaewn variety was the only one that resisted the drought. The highest plot yield was 1,748 kg/ha and the lowest 724 kg/ha, respectively in the production areas of Kossouma and Djenné.

The GPS measurement of the areas harvested led to:

- 486.8 ha : area of Djenné and Djéa
- 132 ha : area of Gomitogo (the water withdrawn from the plain before harvest time)
- 1,628 ha : area of Kossouma
- 4,523 ha : area of Payaba, Yébé and Koba

In other words, a total of 6,769.8 hectares were harvested in the plain of Pondori, which represents only 15% of the areas normally cultivated.

2.2. Plain of Djonké

2.2.1. Context

In the Djonké plain, only the lowland – in which the Khao Gaewn variety had been sowed -- was flooded. All the yield squares were placed in this area.

2.2.2. Results

Village	Farmer's name	Variety	Production per square, kg					Yield, kg/ha
			C1	C2	C3	C4	average	
Djonké Ouro	Issa Krambé	Khao	3,7	2,7	2,5	2,3	2,8	1,120
	Salman Dembélé	Khao	6,3	5,5	5,1	4,4	5,3	2,130
	Boure Coulibaly	Khao	3,6	3,3	2,8	2,5	3	1,220
	Sotigui Sidibé	Khao	7,5	5	4,2	4,1	5,2	2,080
	Aly Bocoum	Khao	4,4	4,2	3,3	2,2	3,5	1,410
	Hamadoun Diallo	Khao	5,2	3,2	2,8	2,5	3,4	1,370
	Aly Guindo	Khao	2,5	2,3	1,9	1,9	2,1	860
	Allaye Coulibaly	Khao	6	5,5	4,6	3,4	4,8	1,950
Djonké	Siné Coulibaly	Khao	5	3,1	2,3	2,1	3,1	1,250

Bamb	Abdoulaye Njé	Khao	4,5	4,2	4	3	3,9	1,570
	Bocary Aly Pléaq	Khao	5	4	3,5	3,5	4	1,600
	Bocary Traoré	Khao	4,5	3,5	3	2,5	3,3	1,350
	N'Djo Dansiré Pléa	Khao	4,5	4,2	4	3,5	4	1,620
	Abdoulaye Coulibaly	Khao	4,1	3,6	3	2,5	3,3	1,320
Dakadjan	Mamadou Dienta	khao	4,8	4,2	3,5	2,9	3,8	1,540
	Bouréïma Dienta	Khao	5,5	4,3	2,5	1,9	3,5	1,420
	Komany Dienta	Khao	5,2	3,8	3,5	3	3,8	1,550
Guidjowel	Bocary Toulema	Khao	4,2	3,9	3	2,7	3,4	1,380
	Adama Youssou Minta	Khao	3,6	2,5	4,1	2	2,5	1,020
	Bourema Minta	Khao	4,5	4	3,5	2,8	3,7	1,480
Average yield								1,462

The average yield in the plain of Djonké was 1,462 kg/ha. The highest plot yield was 2,130 kg/ha and the lowest 860 kg/ha. These results are based on the analysis of measurements made in 80 yield squares placed in 20 plots throughout the plain.

The area of the plain that flooded and was therefore harvested was 538.20 ha i.e, 38% of the total area of the plain.

2.3. General comments

A reduction of production was observed in all the plains where DAD operates. The yield fluctuated between 2.30 T/ha and 0.724 T/ha. The principal reasons are the following:

- late onset of rains,
- low river flood levels,
- irregular rainfall during the sowing period,
- early withdrawal of flood waters and consequently poor maturation of the grains.

The 2002 agricultural production campaign was extremely poor. Rainfall from June to September has never been as low during the last fourteen years as it was in 2002 -- the cumulative rainfall at the end of September was only 315 mm (see the **Graph 2.3.1.**). The levels of useful flood -- the useful flood being during the months of August and September -- of the Bani river reported in 2002 were the lowest since 1992 (see the **Graph 2.3.2.**). Of the 49,794 hectares cultivated, only 7,308 ha were harvested, or 15% of the cultivated area. The improved varieties were the only ones that resisted the drought. Indeed, none of the plots with local varieties were harvested at all. Due to the poor harvest, the rice price increased to 140 FCFA/Kg.

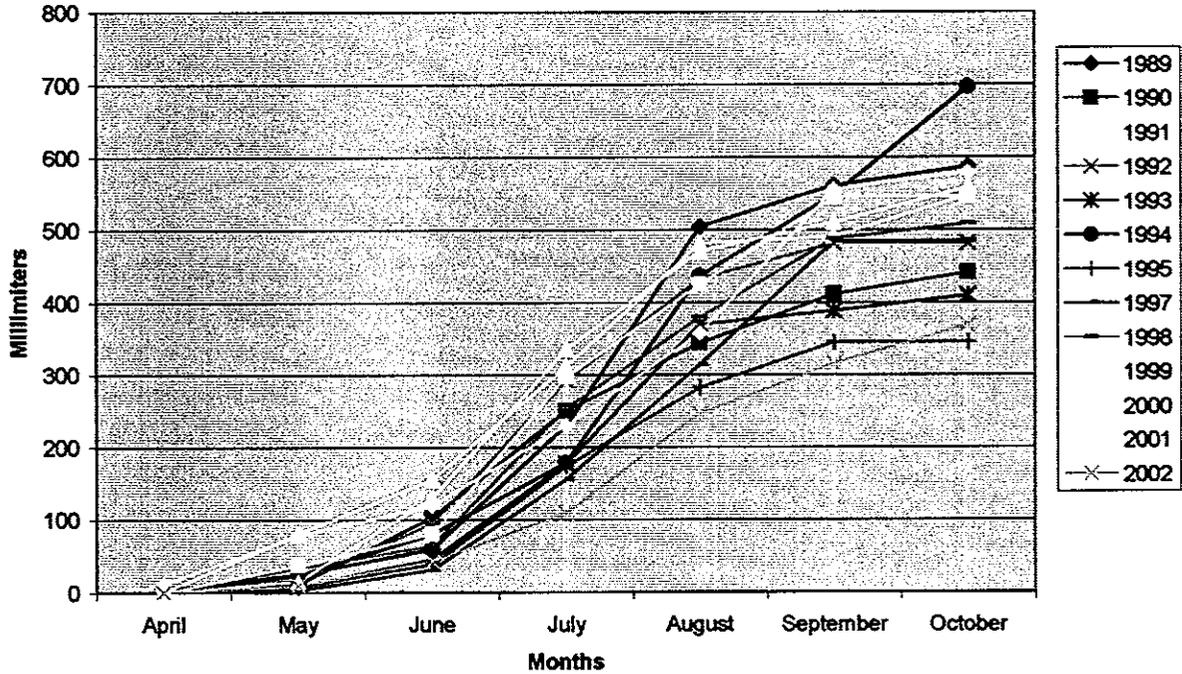
In the plain of Pondori, 2,638 out of 5,633 households produced rice on a total of 6,769.8 ha. In the plain of Djonké 180 out of 371 households produced rice on 538.20 ha. Thus, 2,818 households harvested rice in the two plains during the past production year.

The low production of 2002 should not, however, obscure the high multi-year impact of the DAD project on the rice production. Indeed, the **Graph 2.3.3.** shows how efficient the project has been in increasing the annual rice production in the project area over the last 5 years².

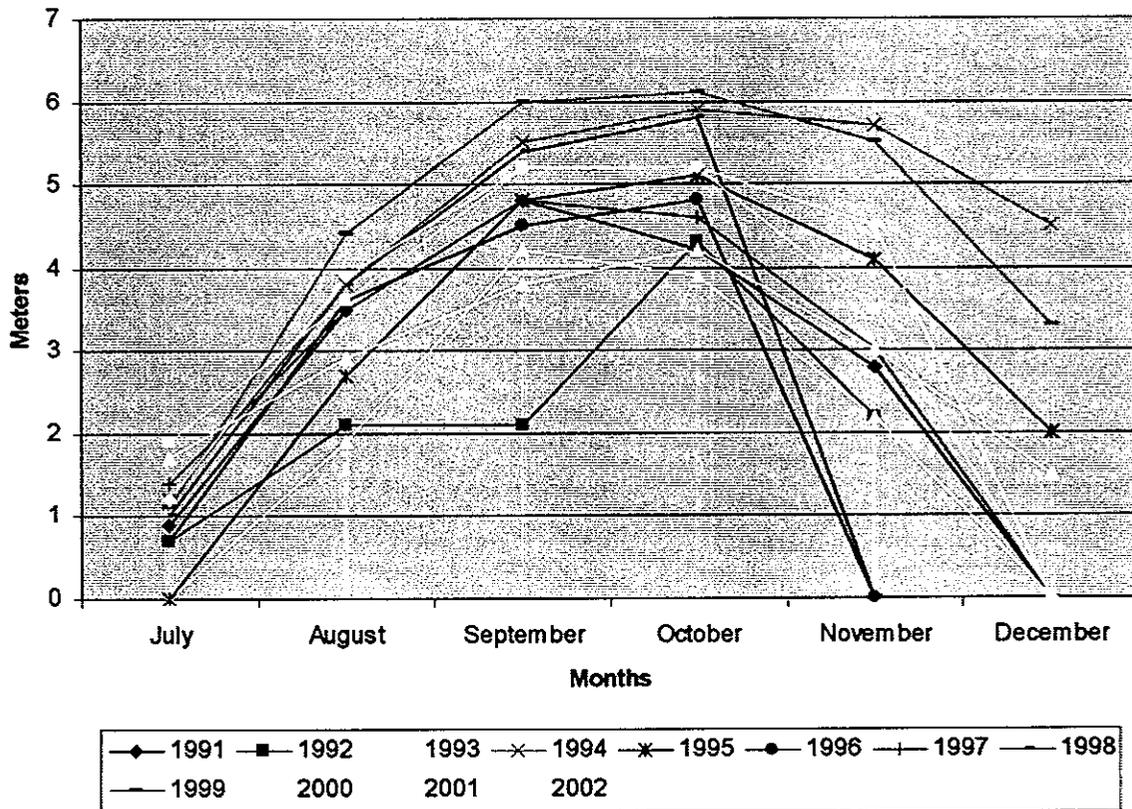
² The low production in '99 -- although it was a good rice production year -- resulted from the fact that only part of the water retention infrastructures were in place. A large part of the production was lost in the areas where the infrastructures were not yet in place

Graph 2.3.1. Evolution of the cumulative rainfall in Djenné
from 1989 to 2002

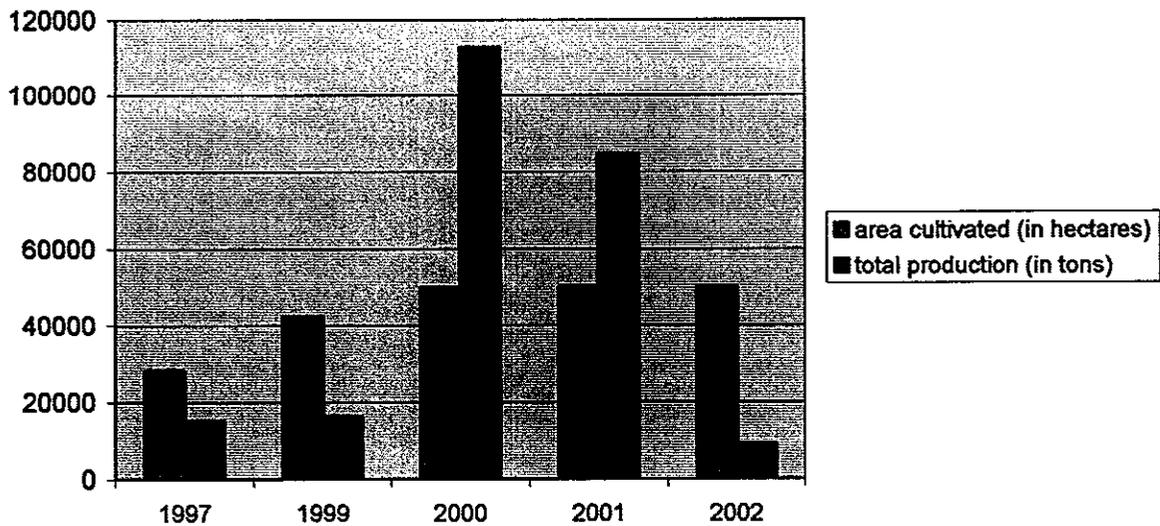
(data unavallable for '96) (source: SLACAER Djenné)



Graph 2.3.2. Level of flooding of the Bani in Sofara from '91 to '02 (source ORM)



Graph 2.3.3. DAD Project - Area cultivated in rice and rice production from '97 to '02



3. Rice Marketing

3.1. Rice marketing groups

The quantity of rice marketed in the project area has been estimated among three marketing groups:

- female rice seller groups (16 groups with a total of 158 members)
- rice traders (2 traders)
- MJT groups (122 groups)

3.2. Quantity of rice marketed

3.2.1. By the female rice seller groups and the rice traders

- Quantity of paddy rice purchased: 283,405 kg
- Quantity of hulled rice purchased: 388,074 kg
- Quantity of paddy rice sold: 312,115 kg (includes the remaining stocks)
- Quantity of hulled rice sold: 359,771 kg
- Quantity of paddy rice in stock: 11,660 kg
- Quantity of hulled rice in stock : 31,068 kg

The quantity of rice marketed by the female rice seller groups and the rice traders until the end of March, 2003, was **672 tons**.

3.2.2. By the MJT groups

Among the 22 mature MJT groups, composed of 723 members, of whom 33% conduct rice marketing activities (according to a survey conducted in May 2002) and market annually 1,4 tons³, the following estimated quantity of rice was marketed: $723 * 33% * 1.4 = 334$ tons.

Among the 100 new MJT groups composed of 3,500 members, the following estimated quantity of rice has been marketed : $3,500 * 33% * 0.7 = 809$ tons.

The estimated quantity of rice marketed by the MJT group members conducting rice marketing activities until the end of March is therefore **1,143 tons**.

3.2.3. Total

The total estimated quantity of rice marketed in the DAD project area by the end of March is: $672 + 1,143 = 1,815$ tons.

³ The assumptions that members of mature and new MJT groups, conducting rice marketing activities, trade respectively 1.4 and 0.7 tons of rice per year, were made in CARE's request for extension of the project submitted in June '02 and were used in this report. These assumptions will be verified by the end of June and the actual quantities of rice marketed will be presented in the final project report.

The cited marketing groups will continue to trade rice through the end of June. The end of project report will take into account the cumulated quantities of rice marketed from October '02 to June '03.

4. Updated project performance against targets

Result	Performance Indicator	Baseline 1997		CY 1999		CY 2000		CY 2001		CY 2002	
		Initial Estimation	Survey Results	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Vol. Of sustainable rice production Increased	Total area cultivated										
	In rice (ha)	27,270	28,231	28,180	48,376.9	29,090	49,695	30,000	49,794	50,000	49,794
	New area in Production (ha) cumulative	0	0	910	16,850	1,820	18,167	2,730	18,266	22,730	18,266
	Average yield per Hectare (T/ha)	1.0	0.539	1.16	0.836	1.32	2.275	1.48	1.922	2.3	1,252
	Total Production (T)	27,270	1,186 15,216	32,700	16,309.6	38,399	113,056	44,400	84,894	115,000	9,149.6
	Area with improved Seed (ha) cumulative	0	0	500	513	1,750	1,758	5,250	6,327	8,500	8,910.30
	Area under improved Production (ha) cumulative	0	0	10,000	13,064	20,000	24,954	30,000	31,293	30,000	33,879
Value of rice Production Increased	Value of rice	3,409	179	4,094	2,039	4,794	14,132	5,536	10,612	14,375	1,281
	Produced (millions of CFA)		1,902								
	Revenue per hectare (FCFA)	NA	63,375	NA	104,516	NA	284,375	NA	213,118	287,500	175,280
	Revenue per person (FCFA)	NA	34,033	NA	42,130	NA	263,455	NA	198,611	269,039	75,120
	Revenue per household (FCFA)	NA	389,287	NA	463,439	NA	1,844,186	NA	1,390,279 (5)	1,883,273	525,840
	Rice marketed	Tons	NA	NA	NA	NA	NA	NA	NA	NA	4,000
Infrastrucure manual		NA	NA	NA	NA	NA	NA	NA	NA	Approved	To be approved by June '03

⁴ As of end of March. The end of June data will be reported at the end of the project. Surveys will be conducted to estimate the quantity sold by each MJT group member.

5. Financial Analysis of the DAD project

A financial analysis of the impact of the DAD project is presented in the **Appendix 1**. The analysis has been processed using the following assumptions :

- all the costs associated to the project implementation have been taken into account in the analysis. These include the USAID and CARE funding as well as the contribution of the local participants.
- only the rice production increase resulting from the project interventions is considered. The fodder (rice straw and 'bourgou') production increase has not been considered in our analysis.
- the 1997 rice production had been considered as the project baseline. Given the fact that the flood levels in the rivers from July to November 1997 were normal but the rainfall in June 1997 was poor, we have increased the 1997 baseline production by 16%, based on data collected by the SLACAER in free submersion systems around Djenné
- the rice production of the years 2003 to 2017 have been projected assuming five year cycles, among which two years show good production (like in 2000 and 2001), one year shows a very poor production (like in 2002) and two years show an average production. Assuming the onset of a very poor production campaign every five years is still conservative.

Under these rather conservative assumptions, our financial analysis of the DAD project leads to an **internal rate of return (IRR) of 87%**, which is impressive.

This analysis shows that **one dollar invested in the DAD project will generate 9.5 dollars** (in actual value) over the twenty years following the construction of the water retention infrastructures.

6. Lessons learned and conclusion

The DAD project, as reported during previous years, has successfully contributed to dramatically increase the rice production during years of good rainfall and/or good river flood levels. The report of the results of this last rice production campaign proves that, under poor rainfall conditions, the DAD project still contributed to improve the rice production in two ways. First the water retention infrastructures that the project built allowed the water to stay longer and to be spread over larger areas, as testified by some farmers (see the DAD project CY02 report). Secondly, only the improved varieties, the use of which has been promoted by DAD, gave any yield.

However, the overall low production of this last campaign underlines the need to not only increase the annual rice production in the project areas, but also to assist farmers to put in place a food security strategy. Given the cyclical nature of rainfall and drought in the region, farmers could better take advantage of the high surpluses that the improved plains generate during campaigns of good rainfall to fill the rice production deficits that still occur in periods of low and irregular rainfall, despite the implementation of the project technical recommendations.

**Appendix 1. - Estimated Financial Impact of the "Delta Agricultural Project" (DAD) implemented by CARE in Mali
Estimated Internal Rate of Return**

'98	198,218,097	198,218,097	-	0	198,218,097	2,130	120	255,637,351	57,419,254	57,419,254
'99	269,700,386	261,845,035	-	3,912,064,800	4,181,765,186	-1,342	120	-161,058,053	-4,342,823,239	-4,216,333,242
'00	460,586,912	434,149,224	10,008,000	4,104,097,400	4,574,694,312	95,405	120	11,448,596,947	6,873,902,835	6,479,312,504
'01	453,571,405	415,082,088	11,008,800	4,118,521,700	4,583,101,905	67,243	120	8,069,141,947	3,486,040,042	3,190,220,469
'02	417,285,173	370,752,472	12,109,680	4,118,521,700	4,547,916,553	-8,501	120	-1,020,138,053	-5,566,054,606	-4,947,144,400
'03	588,777,271	507,884,448	13,320,648	4,118,521,700	4,720,619,619	51,382	120	6,165,866,947	1,445,247,329	1,246,683,041
'04			14,652,713	4,118,521,700	4,133,174,413	51,382	120	6,165,866,947	2,032,692,534	1,702,347,986
'05			16,117,984	4,118,521,700	4,134,639,684	95,630	120	11,475,623,947	7,340,984,263	5,968,891,989
'06			17,729,782	4,118,521,700	4,136,251,482	67,243	120	8,069,141,947	3,932,890,485	3,104,680,050
'07			19,502,761	4,118,521,700	4,138,024,461	-8,501	120	-1,020,138,053	-5,158,162,514	-3,953,302,059
'08			21,453,037	4,118,521,700	4,139,974,737	51,457	120	6,174,875,947	2,034,901,210	1,514,157,608
'09			23,598,340	4,118,521,700	4,142,120,040	51,457	120	6,174,875,947	2,032,755,907	1,488,506,117
'10			25,958,175	4,118,521,700	4,144,479,875	95,630	120	11,475,623,947	7,331,144,073	5,141,916,951
'11			28,553,992	4,118,521,700	4,147,075,692	67,243	120	8,069,141,947	3,922,068,255	2,670,736,272
'12			31,409,391	4,118,521,700	4,149,931,091	-8,501	120	-1,020,138,053	-5,170,089,144	-3,418,024,768
'13			34,550,330	4,118,521,700	4,153,072,030	51,457	120	6,174,875,947	2,021,803,917	1,336,650,569
'14			38,005,363	4,118,521,700	4,156,527,083	51,457	120	6,174,875,947	2,018,348,864	1,334,366,365
'15			41,805,900	4,118,521,700	4,160,327,600	95,630	120	11,475,623,947	7,315,296,348	4,836,272,670
'16			45,986,490	4,118,521,700	4,164,508,190	67,243	120	8,069,141,947	3,904,633,758	2,581,422,902
'17			50,585,139	4,118,521,700	4,169,106,839	-8,501	120	-1,020,138,053	-5,189,244,891	-3,430,702,196
	2,388,141,245	2,187,931,362	458,356,525	78,031,031,100	80,875,528,869	926,644				22,668,058,115

Notes: The fodder production (rice straw and "bourgou") increase due to the project has not been considered in our analysis. Only the rice production has been taken into account.

The IRR calculation has been processed using the following actual or estimated (best estimate) data and assumptions:

- (1) All the project costs, including USAID's contribution (\$3,181,401), CARE's contribution (\$449,218) and the Participants' contribution estimated at 20% of the infrastructure costs (109,871,896 FCFA or \$168,726) have been taken into consideration in the analysis (see Appendices 1.1. and 1.2.). The infrastructures built by the project are depreciated over 20 years.
- (2) A 3% annual inflation rate has been used to obtain the actual '98 value.
- (3) An estimate of the project infrastructure maintenance costs is presented in the Appendix 1.3. A 10% annual cost increase has been used.
- (4) An estimate of the rice production costs is presented in the Appendix 1.4.
- (6) The actual rice production increases secured due to the project have been used for the years '98 to '02. We made the assumption that a bad production year such as 2002 would occur every five years. The calculation of the annual rice production increases is presented in the Appendix 1.5.
- (10) A 3% annual inflation rate has been used to obtain the actual '98 value.

**Appendix 1.1. - Estimated Financial Impact of the "Delta Agricultural Project" (DAD) implemented by CARE in Mali
Project Total Costs**

USAID's funds	106,129,229	238,706,180	413,348,396	372,550,988	396,943,322	533,978,985	2,061,657,100
CARE's funds	92,088,868	-7,848		49,591,092	20,341,851	54,798,285	216,812,248
(infrastructure costs)(1)	0	155,010,273	236,202,580	157,146,629			548,359,482
Participants' in-kind contribution	0	31,002,055	47,240,516	31,429,326	0	0	109,671,896
Total	198,218,097	269,700,386	460,588,912	453,571,405	417,285,173	588,777,271	2,989,271,226

Notes:

(1) The infrastructure costs are included in the expenses incurred against USAID's and/or CARE's funds; they are showed to estimate the participants' in-kind contribution.

**Appendix 1.2. - Estimated Financial Impact of the "Delta Agricultural Project" (DAD) implemented by CARE in Mali
Project Infrastructure Costs**

PONDORI	44,527.0	1999-2000	9 water retention infrastructures 3 canals	48,705,997
		2000-2001	3 water retention infrastructures	117,168,657
DJIGUINE	583.8	1999-2000	4 water retention infrastructures 2 canals 2 dikes	81,372,480
SYN	3,285.2	2000-2001	1 water retention infrastructures 1 canal (digging works)	53,370,527
		2001-2002	1 water retention infrastructures 1 belt dike	48,221,819
DJONKE	1,397.9	2000-2001	1 water retention infrastructure 1 dike	40,731,600
Consolidations (*)				83,993,014
Monitoring and Control Studies				74,795,388
	49,793.9			648,769,482

(*) Some additional works have been required to strengthen the infrastructures built in the Pondori, Djiginè and Syn plains.

1999-2000	155,010,273
2000-2001	236,202,580
2001-2002	157,146,629
Total	548,359,482

**Appendix 1.3. - Estimated Financial Impact of the "Delta Agricultural Project" (DAD) implemented by CARE in Mali
Maintenance Costs of the Project Infrastructures**

Lubrication of the "batardeaux" and floodgates	100	200	20,000	0
Transportation of the "batardeaux" (cost per infrastructure)	3,500	10	35,000	1
Monitoring of the flood (reading the flood scale)	750	84	63,000	1
Backfilling of the gulleys in the dikes	3,500	40	140,000	3
cleaning out of the canals	1,950,000	5km	9,750,000	196
			10,008,000	201

This amount represents the actual maintenance cost of the second year of the project. In order to take into account the required additional maintenance needs of the following years, we will increase this amount by 10% each year.

Appendix 1.4. - Estimated Financial Impact of the "Delta Agricultural Project" (DAD) implemented by CARE in Mali
Rice production costs (per hectare)

Activity/expense	Quantity	Unit Price	Value	Value
Seeds (80 kg/ha)(local seeds = 125 FCFA/kg ; improved seeds = 240 FCFA/kg)			10,000	19,200
2nd tillage (begining of the rainy season) and sowing			15,000	15,000
manual weeding	30	1000	30,000	30,000
harvesting	16	1000	16,000	16,000
packaging (300FCA/bag)			2,100	4,500
threshing	20-40	1000	20,000	40,000
transportation (200FCFA/bag)			1,500	3,000
pirogue renting			1,500	3,000
tillage after harvest			15,000	15,000
Total			100,100	145,700

	28,231	3,136,464,100	3,136,464,100	-
98	48,377	3,136,464,100	7,048,528,900	3,912,064,800
99	49,695	3,136,464,100	7,240,561,500	4,104,097,400
00	49,794	3,136,464,100	7,254,985,800	4,118,521,700
01	49,794	3,136,464,100	7,254,985,800	4,118,521,700
02	49,794	3,136,464,100	7,254,985,800	4,118,521,700
03	49,794	3,136,464,100	7,254,985,800	4,118,521,700
04	49,794	3,136,464,100	7,254,985,800	4,118,521,700
05	49,794	3,136,464,100	7,254,985,800	4,118,521,700
06	49,794	3,136,464,100	7,254,985,800	4,118,521,700
07	49,794	3,136,464,100	7,254,985,800	4,118,521,700
08	49,794	3,136,464,100	7,254,985,800	4,118,521,700
09	49,794	3,136,464,100	7,254,985,800	4,118,521,700
10	49,794	3,136,464,100	7,254,985,800	4,118,521,700
11	49,794	3,136,464,100	7,254,985,800	4,118,521,700
12	49,794	3,136,464,100	7,254,985,800	4,118,521,700
13	49,794	3,136,464,100	7,254,985,800	4,118,521,700
14	49,794	3,136,464,100	7,254,985,800	4,118,521,700
15	49,794	3,136,464,100	7,254,985,800	4,118,521,700
16	49,794	3,136,464,100	7,254,985,800	4,118,521,700
17	49,794	3,136,464,100	7,254,985,800	4,118,521,700

**Appendix 1.5. - Estimated Financial Impact of the "Delta Agricultural Project" (DAD) implemented by CARE in Mali
Production increase resulting from the project**

98	28231	0.625	17,651	28231	0.701	19781	
99	28231	0.625	17,651	48377	0.836	16309	
00	28231	0.625	17,651	49695	2.275	113056	
01	28231	0.625	17,651	49794	1.922	84894	
02	28231	0.625	17,651	49794	1.252	9150	
03	28231	0.625	17,651	49794	1.816	69033	
04	28231	0.625	17,651	49794	1.816	69033	
05	28231	0.625	17,651	49794	2.275	113281	
06	28231	0.625	17,651	49794	1.922	84894	
07	28231	0.625	17,651	49794	1.252	9150	
08	28231	0.625	17,651	49794	1.816	69108	
09	28231	0.625	17,651	49794	1.816	69108	
10	28231	0.625	17,651	49794	2.275	113281	
11	28231	0.625	17,651	49794	1.922	84894	
12	28231	0.625	17,651	49794	1.252	9150	
13	28231	0.625	17,651	49794	1.816	69108	
14	28231	0.625	17,651	49794	1.816	69108	
15	28231	0.625	17,651	49794	2.275	113281	
16	28231	0.625	17,651	49794	1.922	84894	
17	28231	0.625	17,651	49794	1.252	9150	

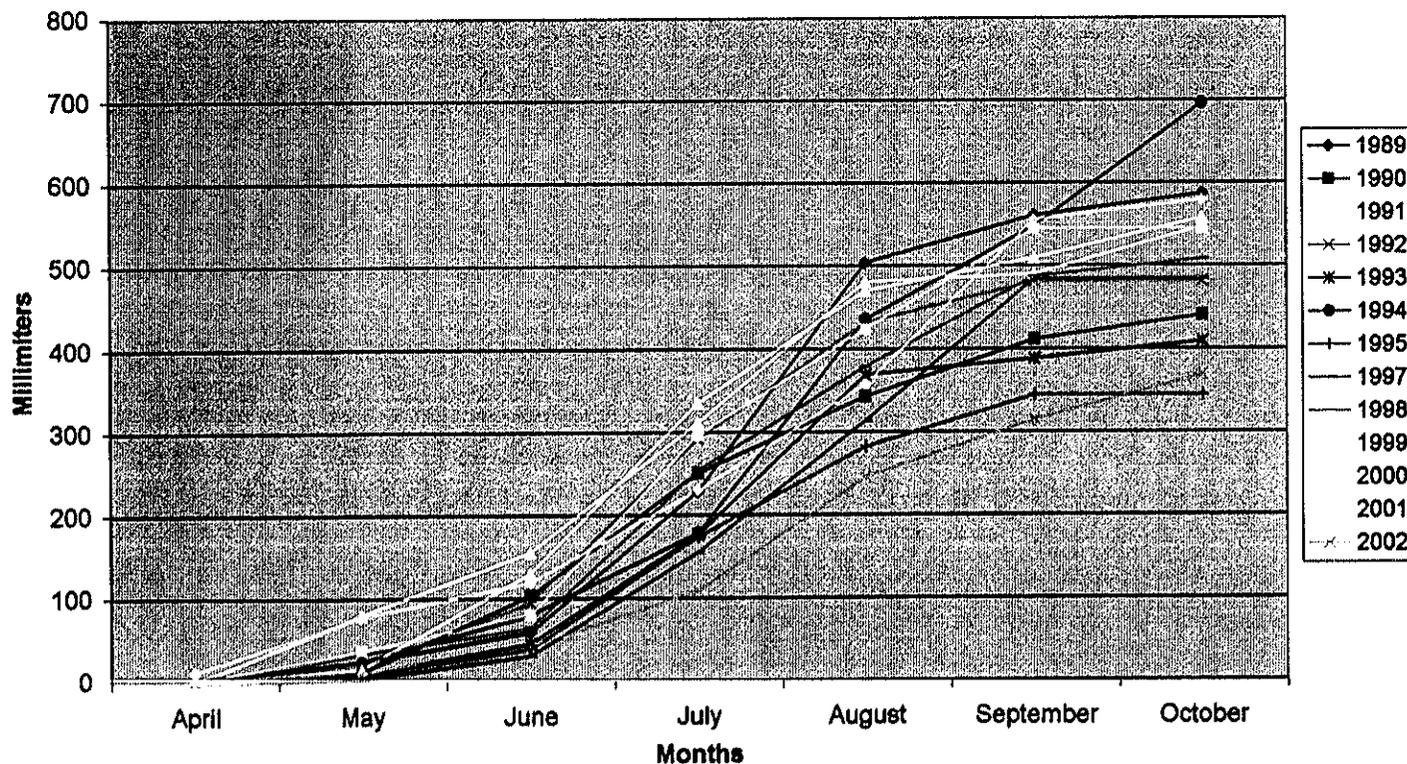
Note: (2) Baseline data had been collected in 1997. Although the level of flooding in 1997 can be considered as an average of the last 12 years (see **Appendix 1.7.**), the rainfall in May and June has been lower than during the average of the last 10 years (see **Appendix 1.6.**). Based on the multi-year production data collected by the DRAMER (see **Appendix 1.8.**) we have increased the production reported in 1997 by 16%.

(6) In some instances, the total production is not equal to the area cultivated times the yield. Indeed, during some years, only part of the area cultivated has been harvested as a result of the lack of water in the plains. In projecting the productions for the future, we considered that a low production, like the one reported in '02, would occur every 5 years. This assumption is adequate when comparing the rainfall of May and June over the last 12 years. Indeed, such a low rainfall did not occur since 1997. The assumption is however over-conservative when considering the level of flooding of the Bani river. Indeed, such a low level of flooding did not occur since 1992, i.e. 10 years ago. In 1999, all the water retention infrastructures were not in place yet, which led to an overflowing of most of the plains. When projecting the productions of the future, we will use a 5 year production cycle taking into account the actual productions of the years '00, '01 and '02 and the averages of those three years for the other two years of the five year cycle.

Appendix 1.6. - Estimated Financial Impact of the "Delta Agricultural Project" (DAD) implemented by CARE in Mali
 Evolution of the cumulative rainfall in Djenné from 1989 to 2002 (source SLACAER Djenné)

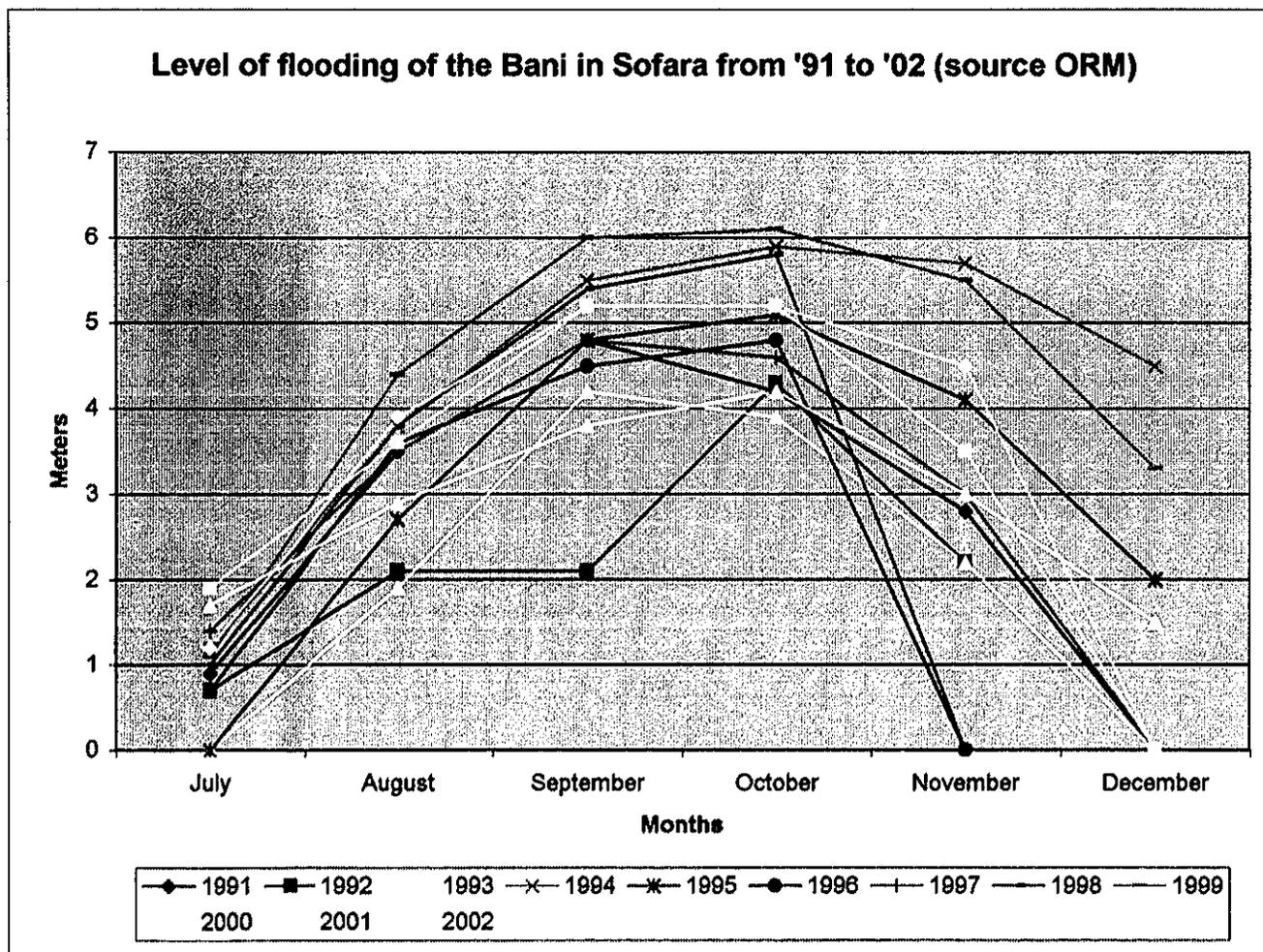
1989	3,4	24,2	59,4	229,2	504,1	560,8	587
1990	0	10,5	102,7	250,2	343	410,8	440,3
1991	0	80,2	154,9	311,5	481	490,4	547,3
1992	0	16,5	94,3	291,8	432,1	480,8	480,8
1993	0	8,2	45,1	177	368,9	387,8	409,1
1994	0	23,5	79,6	178	435,9	548	696,2
1995	0	6,9	38,4	173,4	281,8	344,1	344,1
1997	0	2,8	30,6	155,5	313,6	483,8	483,8
1998	0	33	64	253,5	379,1	487,4	507,9
1999	11,2	77,9	119,5	229,5	357,1	555,7	579,2
2000	0	36,7	79,7	296,1	423,9	545	545
2001	0	15	129,8	335,1	470,1	509,7	557,9
2002	0	9,4	42,5	109,1	246,3	315,2	368,7

Evolution of the cumulative rainfall in Djenné from '89 to '02
 (data unavailable for '96) (source: SLACAER Djenné)



**Appendix 1.7. - Estimated Financial Impact of the "Delta Agricultural Project" (DAD) implemented by CARE in Mali
Evolution of the level of flooding of the Bani river in Sofara from 1991 to 2002**

July	0,9	0,7	0	1,2	0	0,7	1,4	1	1,1	1,2	1,9	1,7
August	3,5	2,1	1,9	3,8	2,7	3,6	3,5	3,8	4,4	3,9	3,6	2,9
September	4,8	2,1	4,2	5,5	4,8	4,5	4,8	5,4	6	5,2	5,2	3,8
October	4,2	4,3	3,9	5,9	5,1	4,8	4,6	5,8	6,1	5,2	5,2	4,2
November	2,8	2,2	2,2	5,7	4,1	0	3	0	5,5	4,5	3,5	3
December	0	0	0	4,5	2	0	0	0	3,3	0	0	1,5



Appendix 1.8. - Estimated Financial Impact of the "Delta Agricultural Project" (DAD) implemented by CARE in Mali
 Rice production yields under free submersion irrigation systems in Djenné (kg/ha) from 1997 to 2002

Area	1997	1998	1999	2000	2001	2002	Average	%
Central	700	900	900	900	860	550	802	15%
Mougna	750	900	900	900	900	650	833	11%
Sofara	710	900	900	950	925	500	814	15%
Konio	600	900	900	700	920	0	670	12%
Kouakrou	800	900	900	1000	925	700	871	9%
Taga	800	900	900	900	925	0	738	-8%
Average		900	900	902	910	600	813	16%

Source: SLACAER Djenné