Assessment of the impact of CBT using the agricultural sustainable intensification (SI) domains in two agro-ecologies of southern Mali

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- Introduction
- Demographic Information
- Economic and Social
- Human well-being
- Conclusion

- CB (runoff, nutrient…)
- Farmers have been using CBT to improve yield performance and increase the household income

- Implementation of CB can improve cotton yield by 30% and reduce erosion rate by 40% at farmers' field level (Traore et al., 2004)

- Grain yield of sorghum was doubled

- For cowpea, the grain yield increase was 81% (Birhanu et al., 2016).

- Apart from production and productivity gains it's important to include a focus on ecological integrity, social sustainability and human condition

- In addition to data on productivity and environment a survey was conducted in the nine villages of AR on social, economic and human well-being.

- The approach allowed to evaluate the benefit of CB on the defined sets of SI domains.

- Base on these studies, it will be possible to make firm conclusions and recommendations regarding CBT applications in different agro-ecologies of southern Mali.

Age and Household size of respondents

The mean of respondent was 29 with SD of 13.01

Koutiala mean of 26 with SD of 24.25.

Mean household size is lower in Koutiala than Bougouni
Household distribution in Koutiala is well spread

This means age of respondents are almost the same in the two districts.

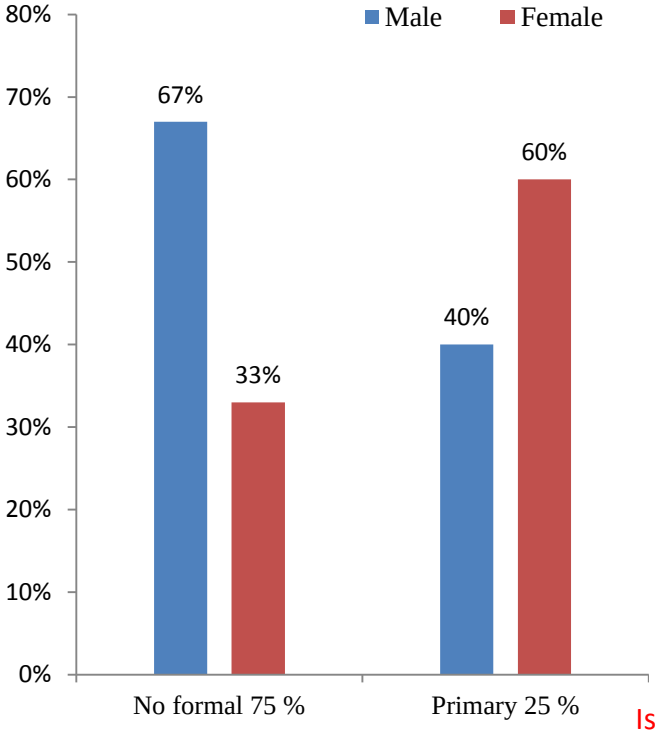
Parameters	Bougouni			Koutiala		
	Minimum	Maximum	Average (sd)	Minimum	Maximum	Average (sd)
Age	30	58	44 (±7.57)	25	57	43 (±9.60)
Household Size	08	51	29 (±13.01)	04	90	26 (±24.25)

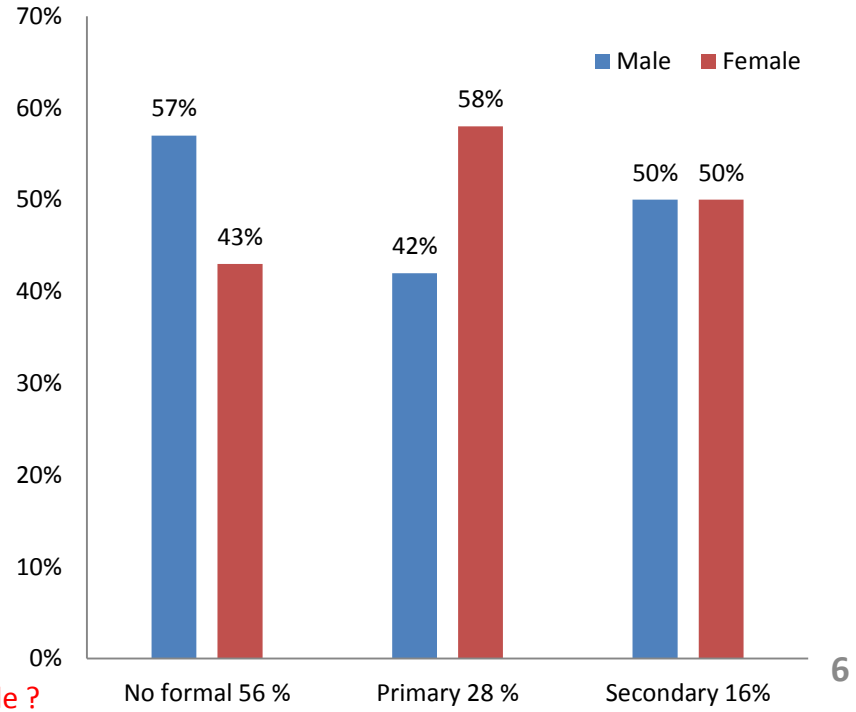
What are the level of education?

Level of education

Bougouni
Two levels of education
-No formal education (75%)
-Primary education (25%)

Koutiala
Three levels of education:
-No formal education(56%)
-Primary education (28%)
-secondary level (16%).



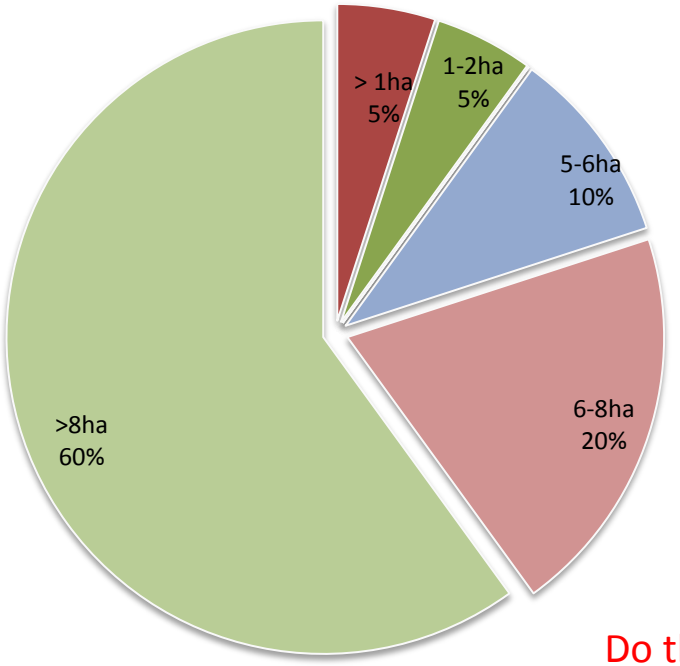


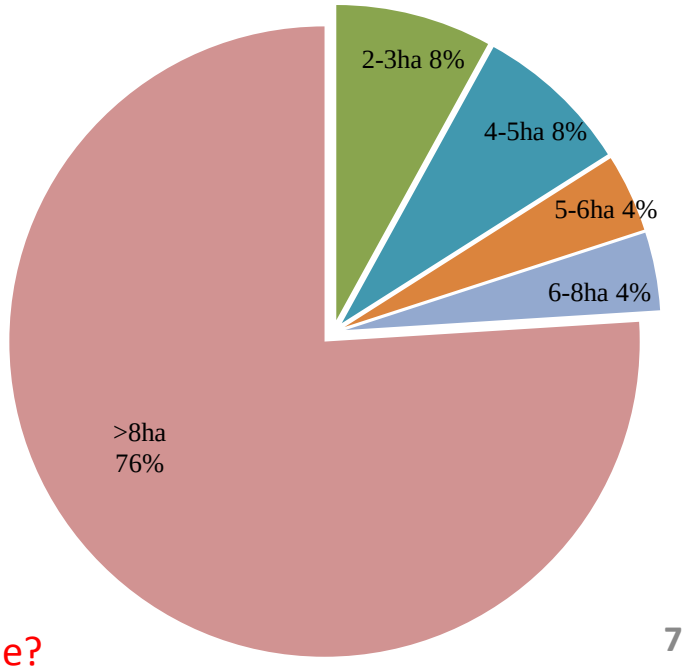
Is land available ?

Farm size

Land availability for farming

-More than 60% of respondents cultivated more than 8 ha
-The percentage of farmers increase with the farm size
-Farms size 1 to 3ha belong to female
-Need management





Do they have other income?

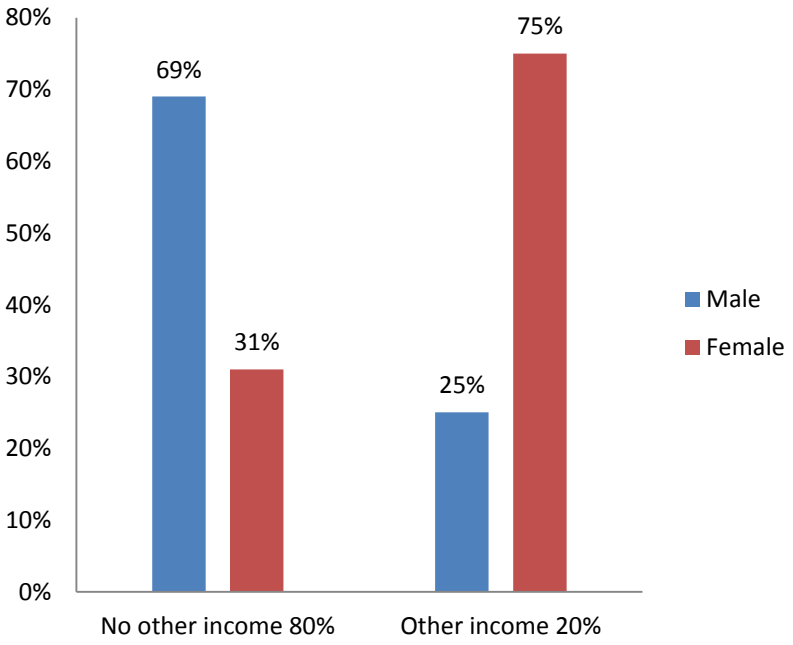
Others income

Why female generating more?

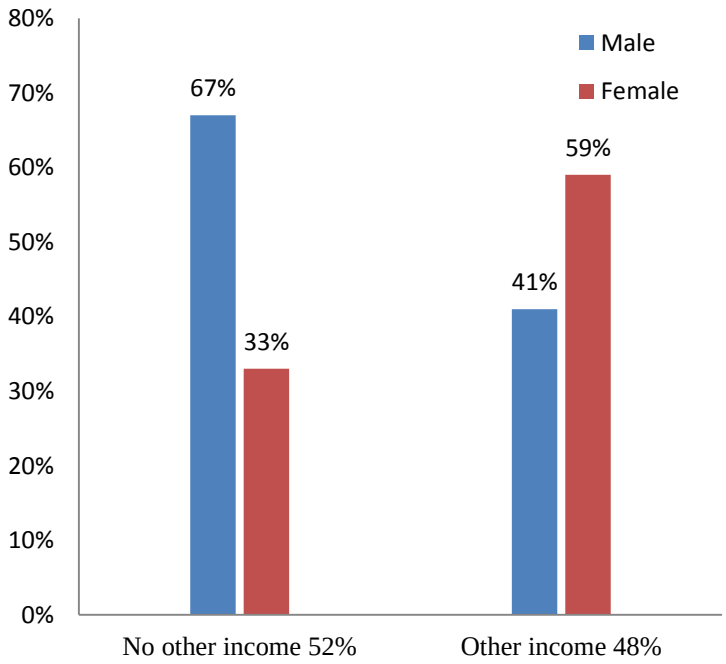
Need to fill condiment price, daily cost….

How? Some hand making, trading…

-Other income 20%
-No other income 80%



-Other income 48%
-No other income 52%



First contributors

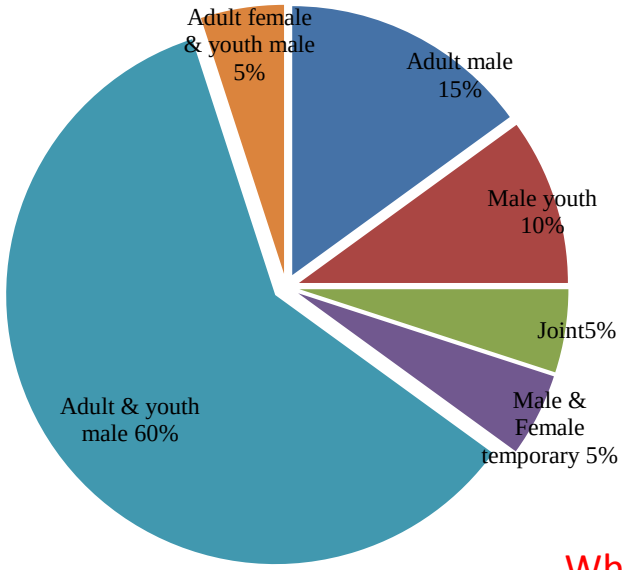
First contributors CB

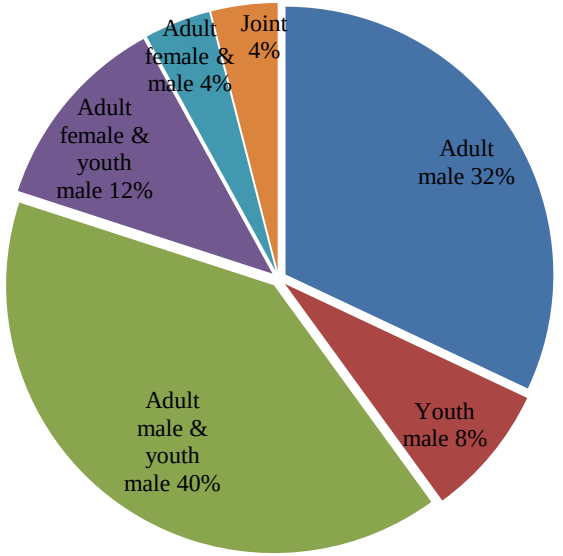
Groups household: Adult male, adult female, youth male and youth female

Adult and youth male 60%
Adult male 15%
Youth male 10%
Adult female 5%

Why female contribution is low?

Adult and youth male 40%
Adult male 32%
Adult female and youth male 12%
Youth male 8%





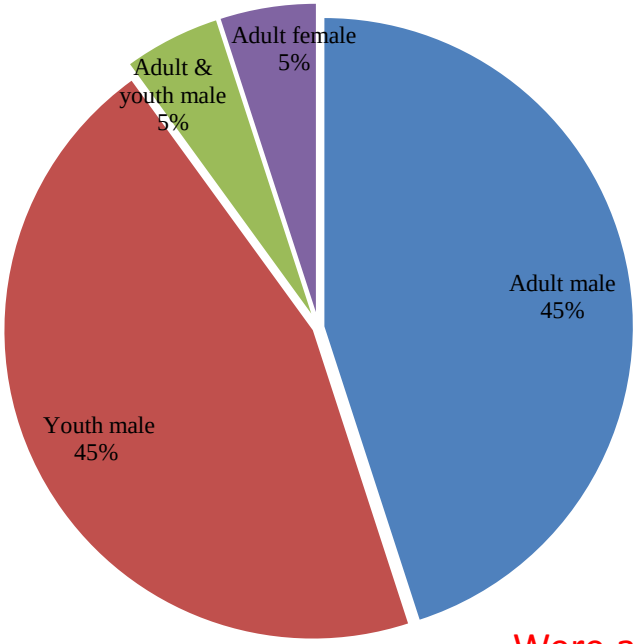
Who contributed most?

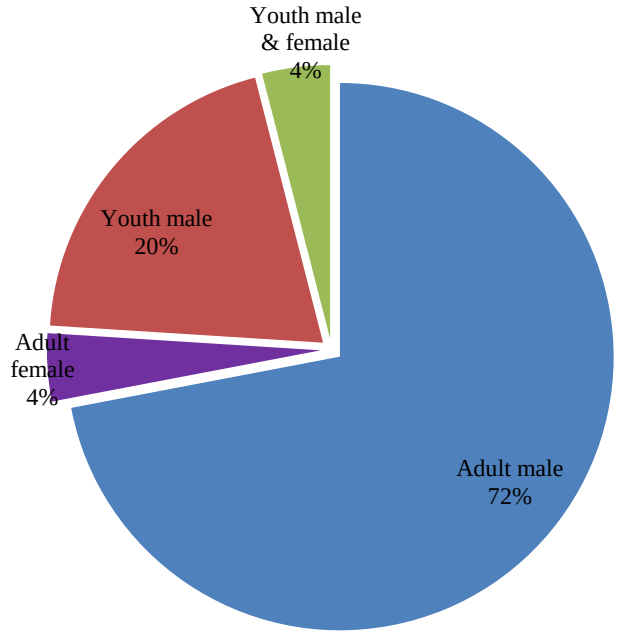
Most contributors

Adult and youth male (45%) each
Adult female 5%
Adult & youth male 5%

Adult 72%
Youth male 20%
Adult female (4%)

Adult and youth male were the most contributors





Were animals used for draught?

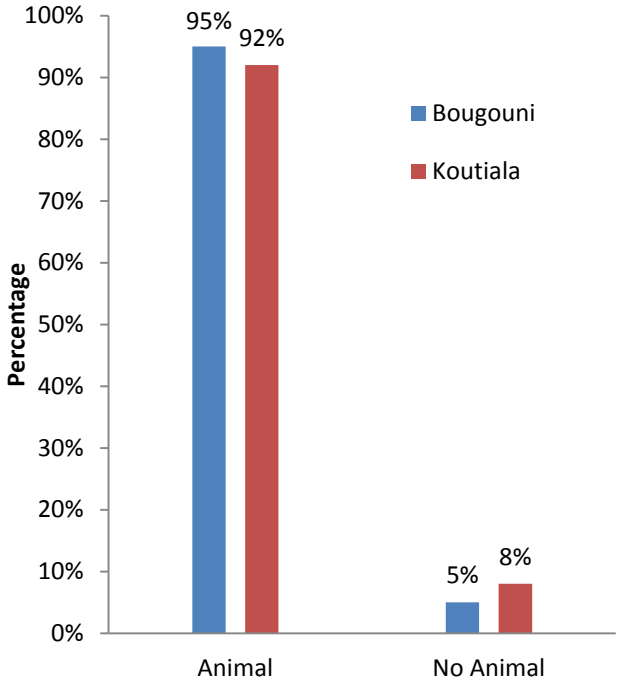
Animals use and ownership

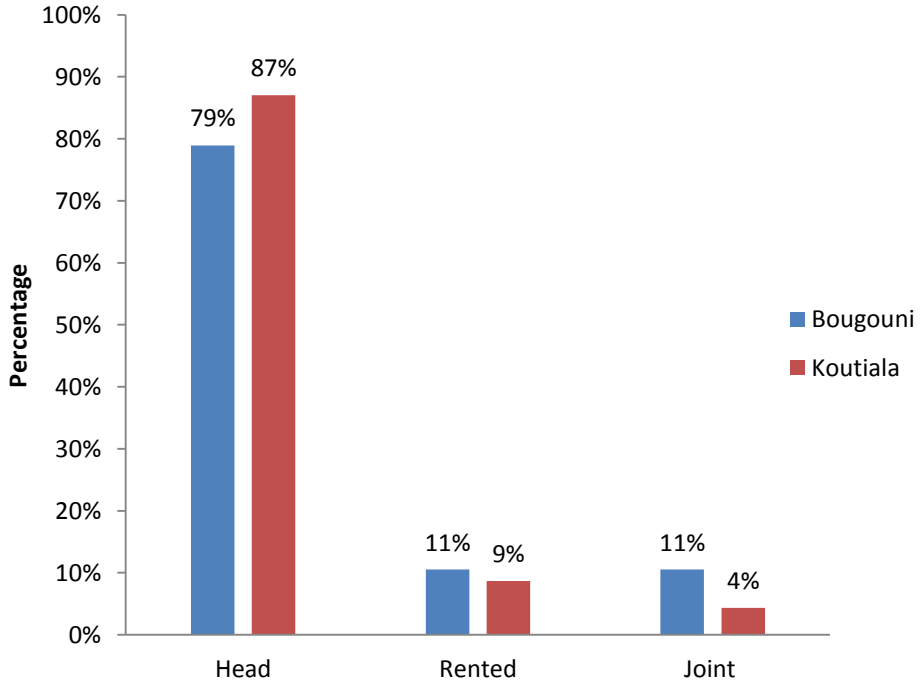
Farmers (92%) used animals for CB construction

Farmers (5 and 8%) did not used animals
Raison: land degradation level and/or absence of animal

Head > 79%
Rented>9%

Farmers (6, 67%) rented at 5500 FCFA/day

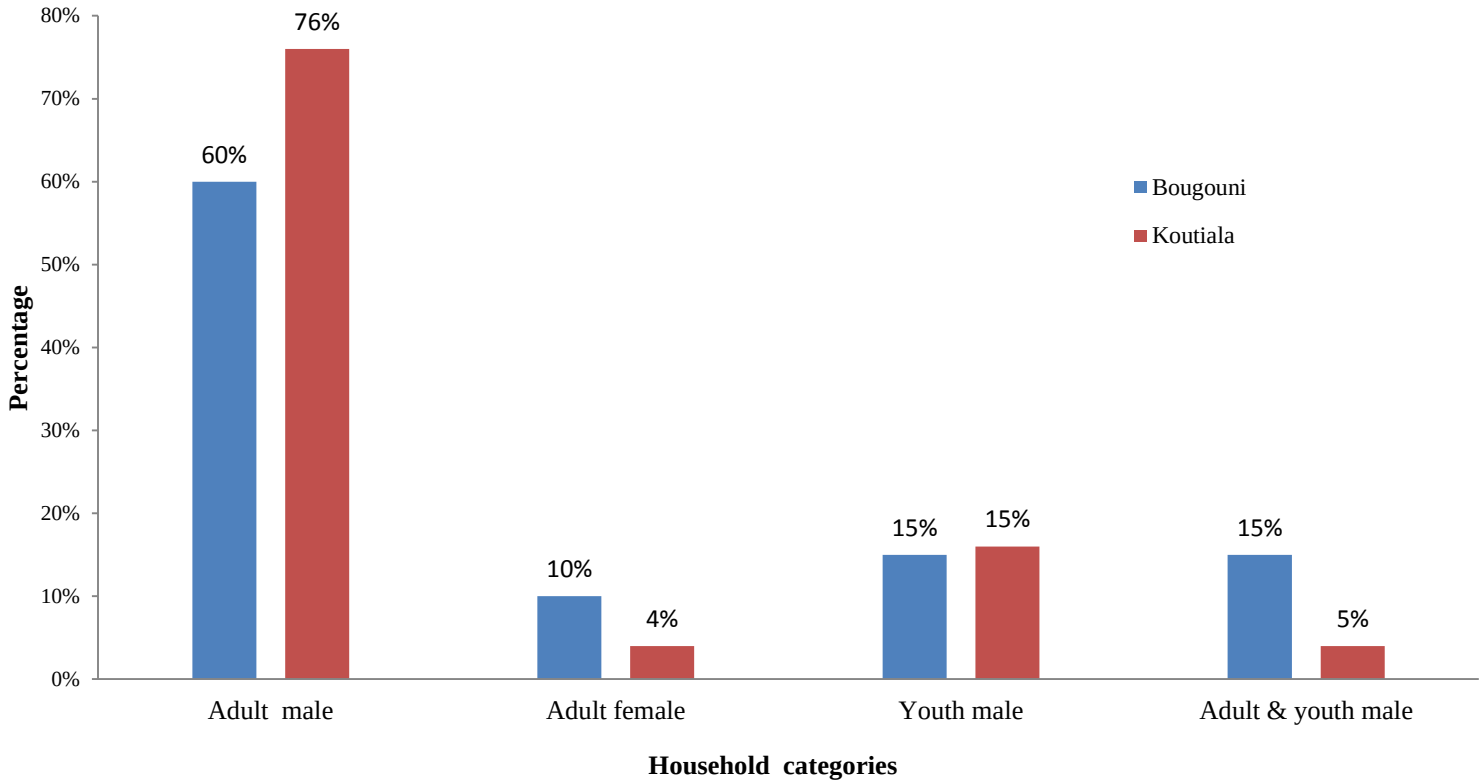




Who maintain CB?

Maintain CB

Despite the equal percentage of youth (15%) to maintain CB in both districts, adult male (76%) maintained in Koutiala while (60%) in Bougouni.

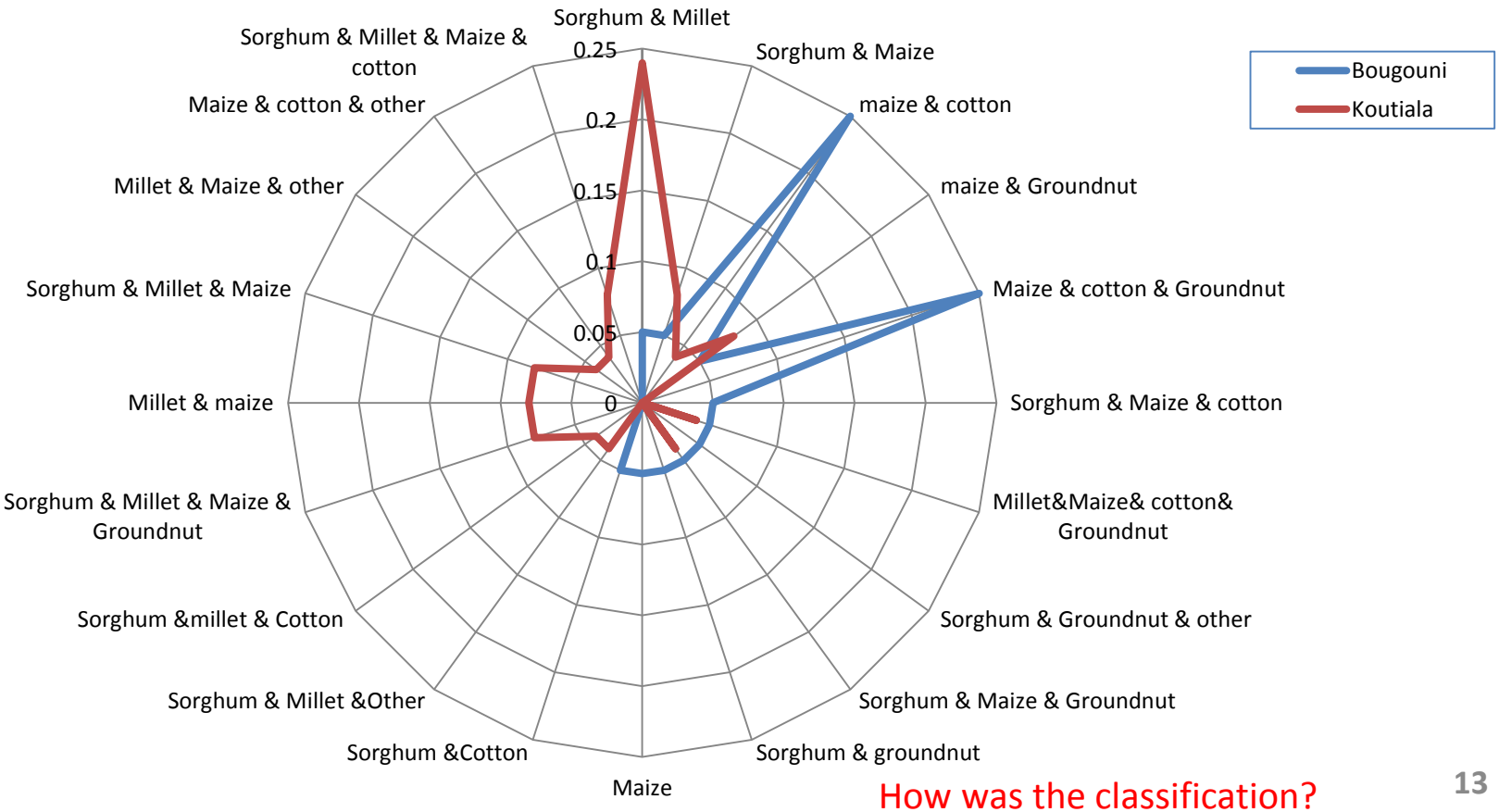


Which crops were cultivated?

Crops cultivated in CB fields

Bougouni: High crops cultivated were maize and cotton then maize, cotton and groundnut combination

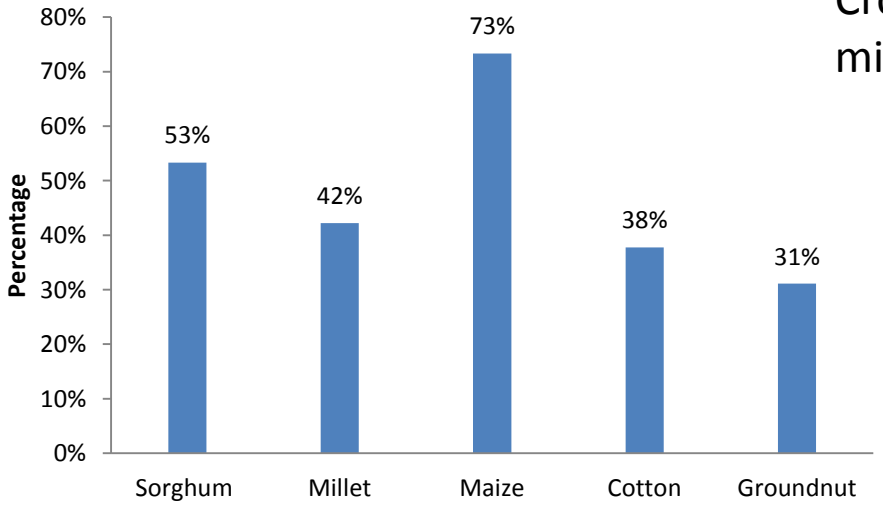
In Koutiala: The most crops cultivated were sorghum and millet followed by sorghum and maize, millet and maize, then maize and groundnut

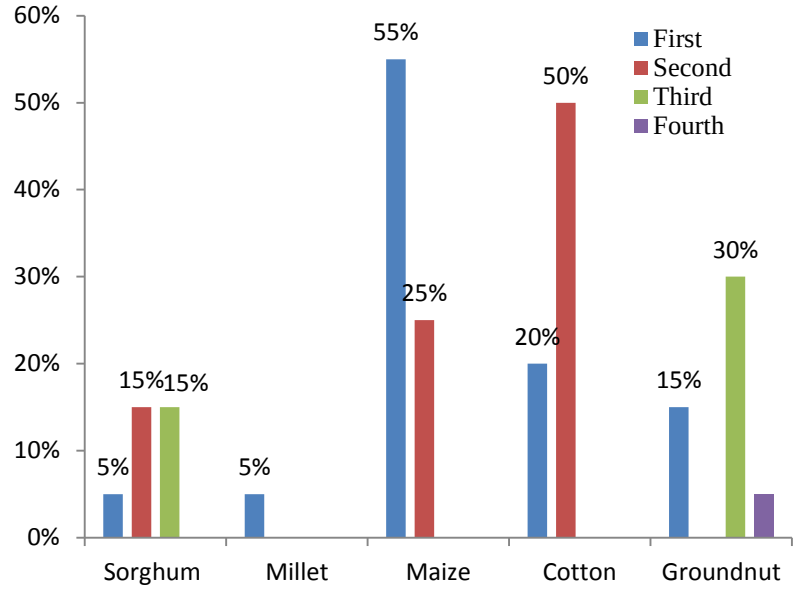


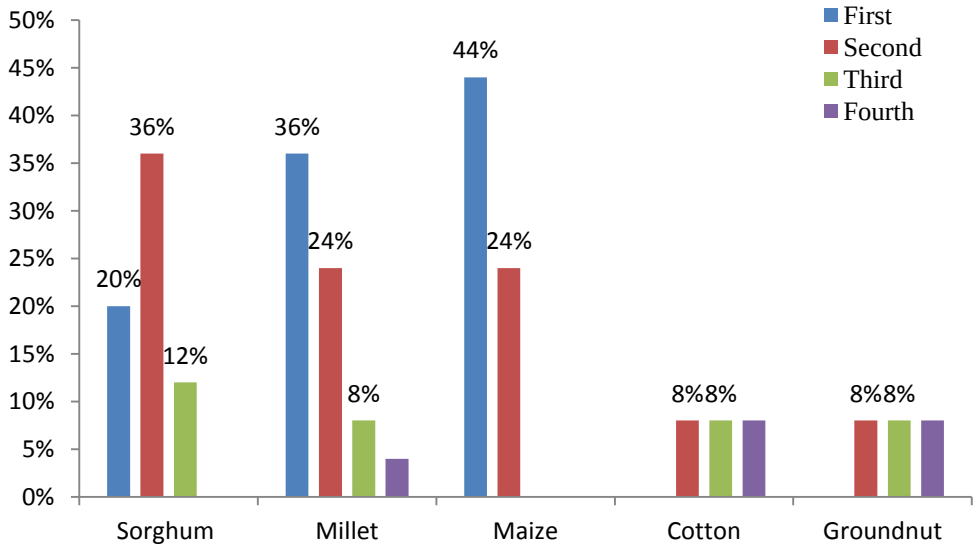
How was the classification?

Crops classification

Crops cultivated in CB: Maize, Sorghum, millet, cotton and groundnut







Who controlled the income?

Control income in household

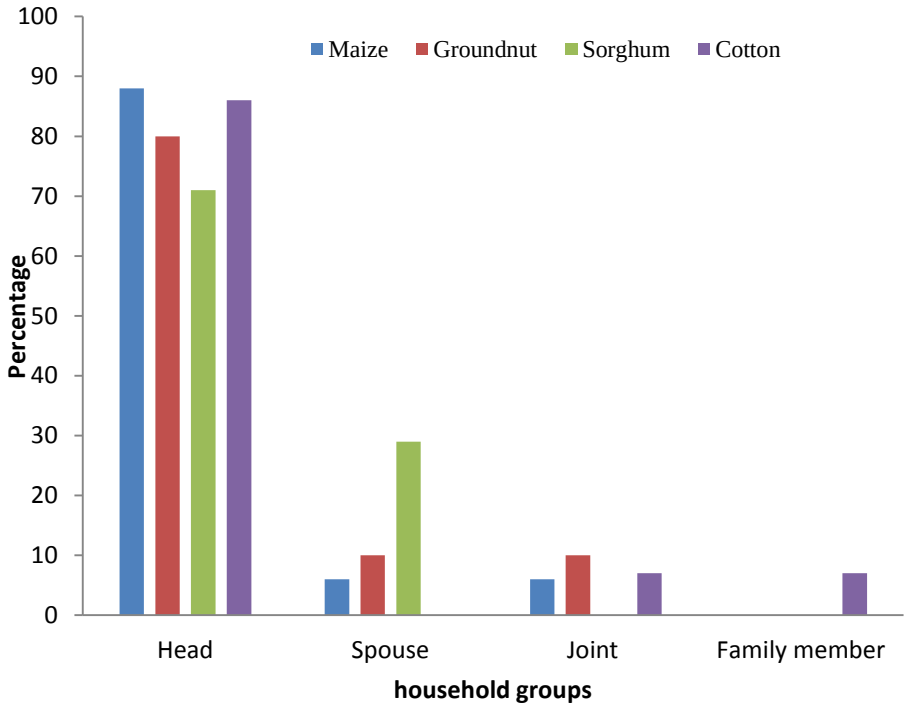
Head: > 80 % for maize, cotton, groundnut and 71% for sorghum.

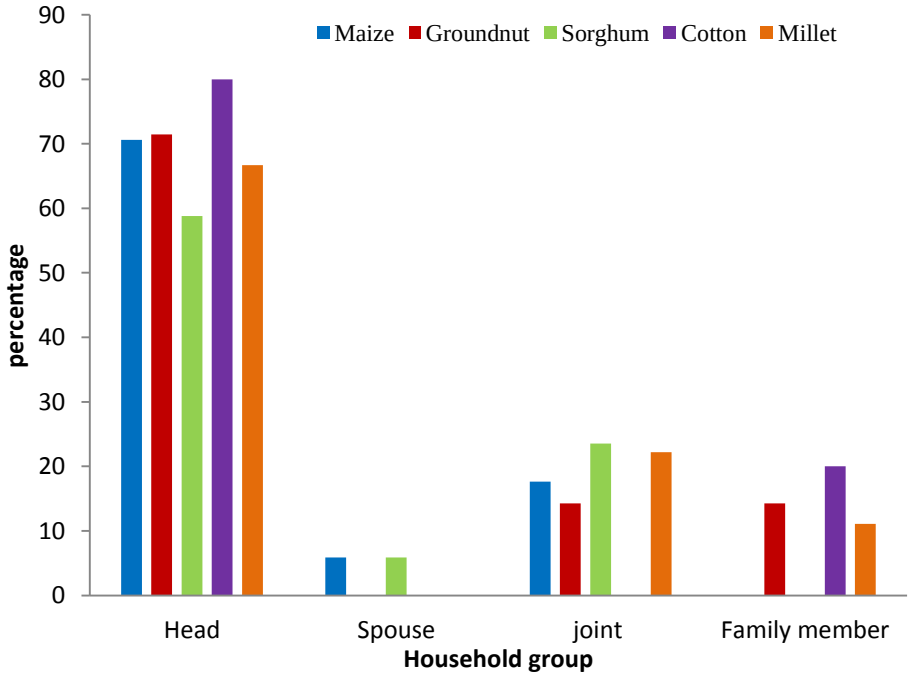
Spouse: sorghum (29%), groundnut (10%), and maize (6%)

Head of the household> (60%)

joint decision and family member follow head

Spouse was less represented





Who decided consumption of income?

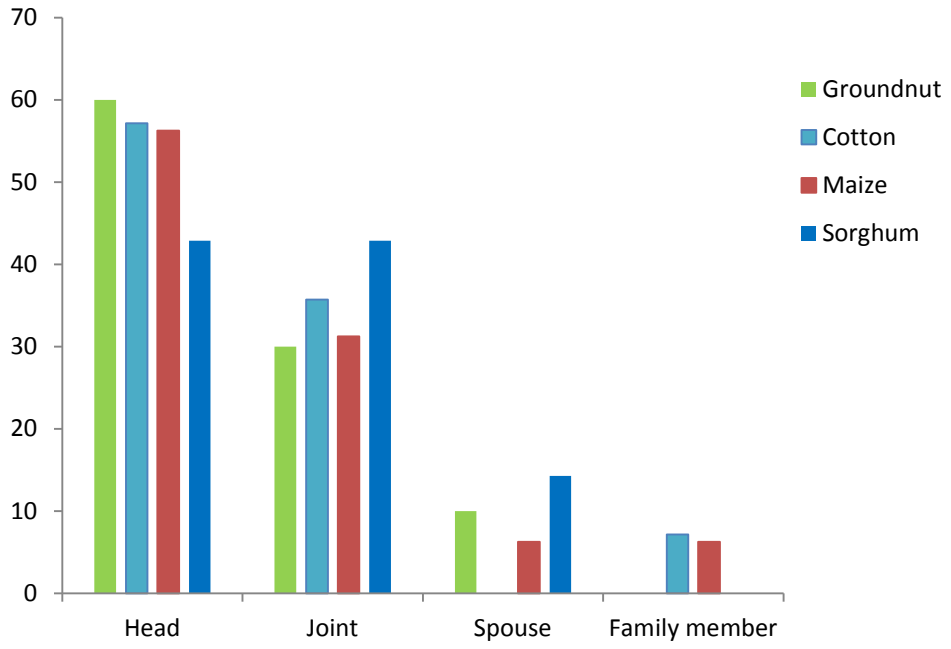
Crops consumption in household

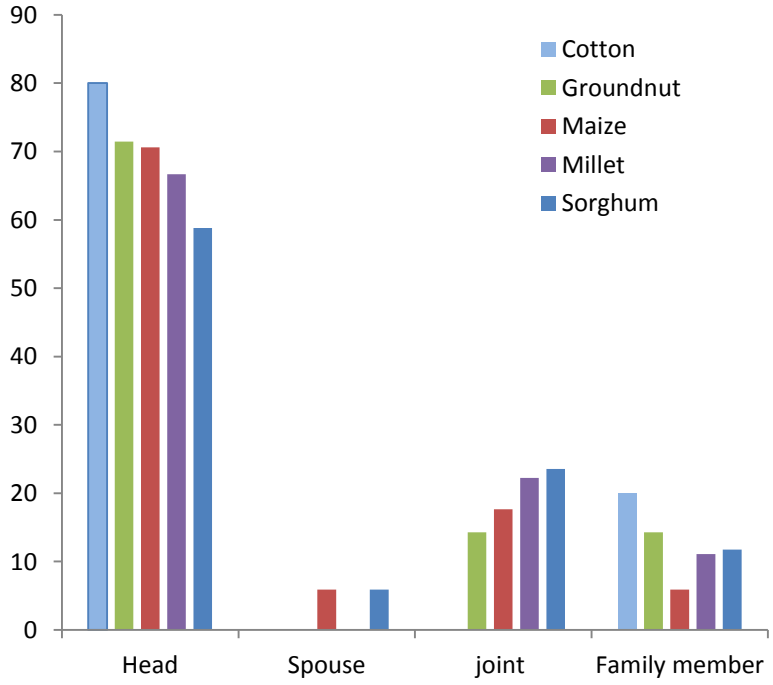
Head: equal percentage with joint in sorghum (43%)
Others incomes were majority decided by head > (56%)

Head of household (59%)

Spouse decision on consumption was very low

High decision taking for spouse (14%) concerned sorghum





Is CB increased food security?

1. Crops yield improvement in two districts after application of CB

- Sorghum 94 and Maize 104 days
- Cotton 605 and groundnut 680 kg

- Sorghum 84, Millet 119, and Maize 165 days
- Cotton 553 and groundnut 483kg

Food Security Issues

- Increased availability of staple crops in Koutiala
- Increased availability of cash crops Bougouni

Parameters	Bougouni			Koutiala		
	Minimum	Maximum	Average (sd)	Minimum	Maximum	Average (sd)
Sorghum (days)	60	180	94 (±43.91)	30	300	84 (±70.33)
Millet (days)	-	-	-	05	420	119 (±107.83)
Maize (days)	21	270	104 (±75.73)	15	600	165 (±157.38)
Cotton (Kg)	120	2000	605 (±503.26)	60	850	553 (±296.67)
Groundnut (Kg)	200	2000	680 (±617.88)	100	1000	483 (±354.50)

2. Crops yield improvement in two districts aggregated

Parameter (unit per household)	Minimum	Maximum	Mean
sorghum (days)	30	300	87,08
Millet (days)	05	420	120,26
Maize (days)	15	600	135,78
Cotton(Kg)	60	2000	597,64
Groundnut (kg)	100	2000	550

CB contributed to the increase of food in two districts by:

- sorghum 87 days, millet 120 days, maize 135 days
- Cotton 597 Kg and groundnut 550 Kg

There is availability of arable land but technology and skill are the issues to increase food availability.

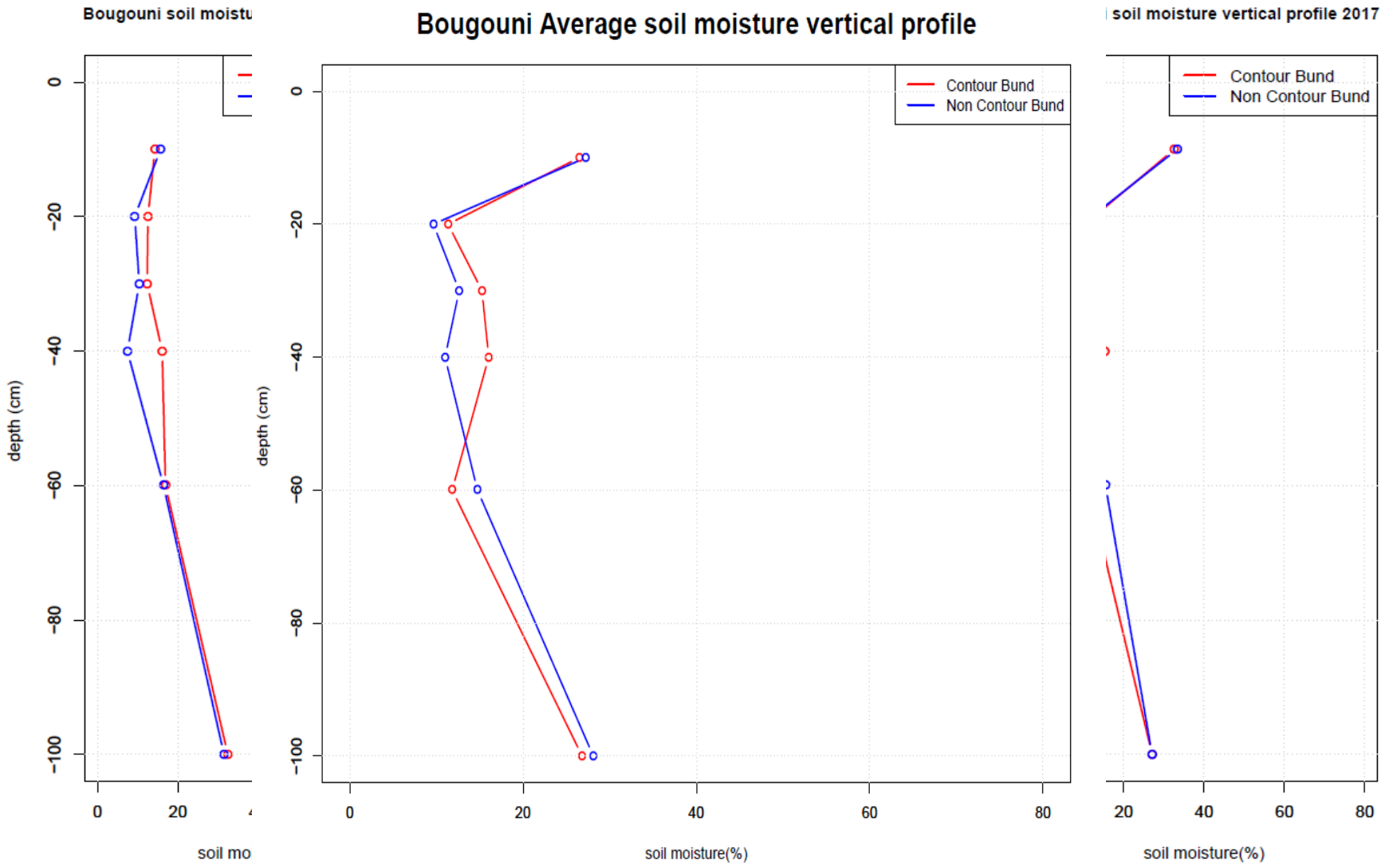
The contribution of female farmers in CB construction was minimum.

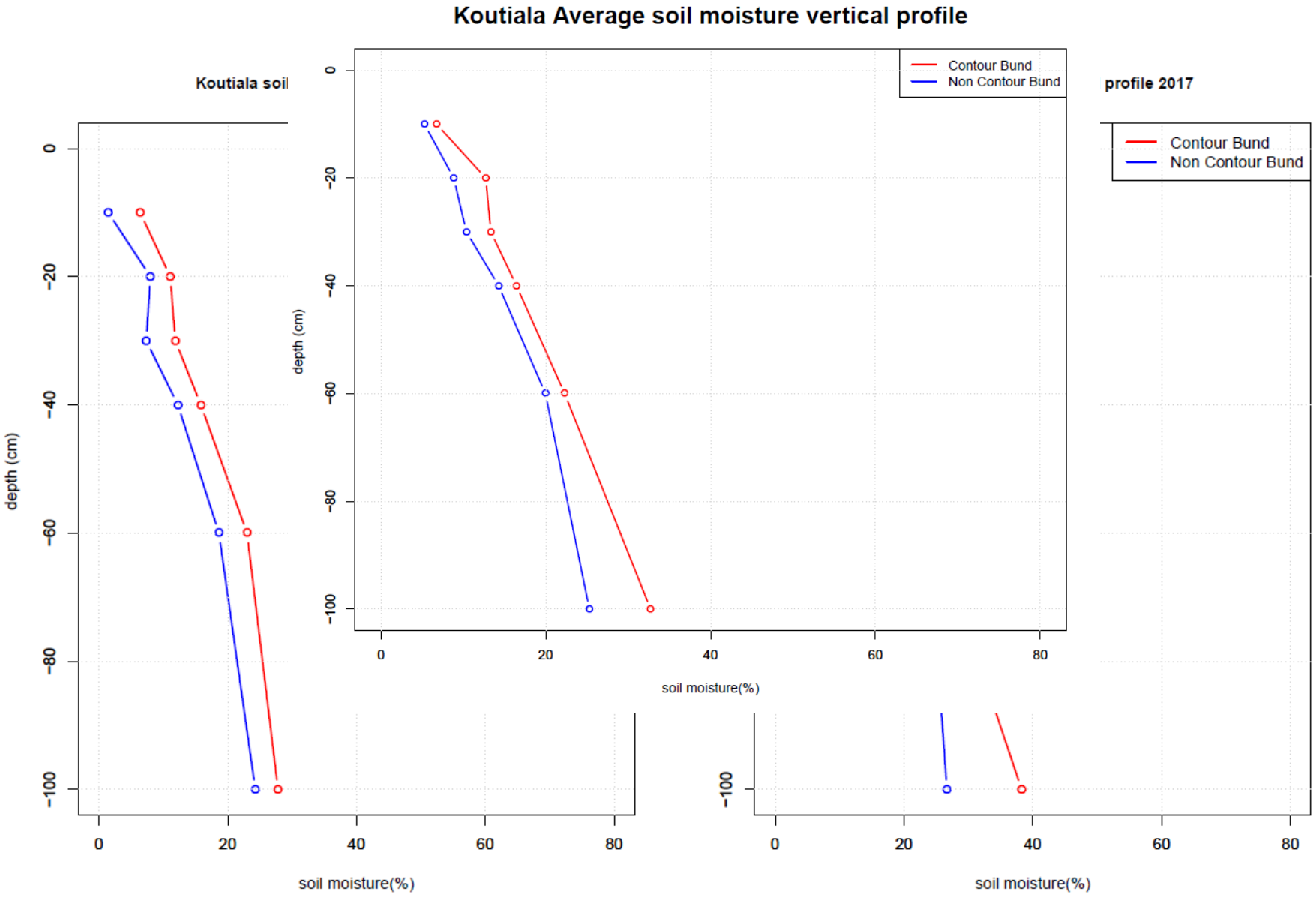
Decisions taken about controlling and consumption of the income were mainly by the head of the household who is an adult male.

With CB application it was possible to be food secure and generate income from cash crops.

Wider application of CB needs commitment from members of the household mainly from adult male and youth male.

Bougouni


Bougouni soil moistu
depth (cm)
soil mo
Bougouni Average soil moisture vertical profile
Contour Bund
Non Contour Bund
depth (cm)
soil moisture(%)
soil moisture vertical profile 2017
Contour Bund
Non Contour Bund
soil moisture(%)


Koutiala Average soil moisture vertical profile
Koutiala soil
profile 2017
Contour Bund
Non Contour Bund
depth (cm)
soil moisture(%)
0
-20
-40
-60
-80
-100
0
20
40
60
80

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