



**THE BANKA IN YATENGA PROVINCE, NORTH WESTERN PART OF
BURKINA FASO: A RUN OFF CAPTING AND STORING TECHNOLOGY**

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Plan

- 1. Introduction**
- 2. Experiment results**
- 3. training**
- 4. Theater**
- 5. Conclusion**

INTRODUCTION

The research zone is located in the north west part of Burkina: Somyaga and Ziga are main study sites





Introduction

The wahara activities in burkina study sites have been focussed on experiments, training and meetings (restitutions of results and monitoring).





Introduction

The public is comospolite and is composed by farmers, pastoralist, artisans, young, old, women). They are involved in the planning of the activities during the meeting organized by Wahara team. The participatory approach has been made to select WHT to experiment.



Public during a meeting

METHODOLOGY OF THE SELECTION OF WHT

SCORING AND RANKING THE WHT AT ZIGA



In the study site, the selection of WHT to be implemented is done by farmers; pastoralists accompanied by extension services with the facilitation of the researchers. NGO and other projects of soil and water conservation are also invited.

TECHNOLOGIES SELECTED

Technologies chosen:

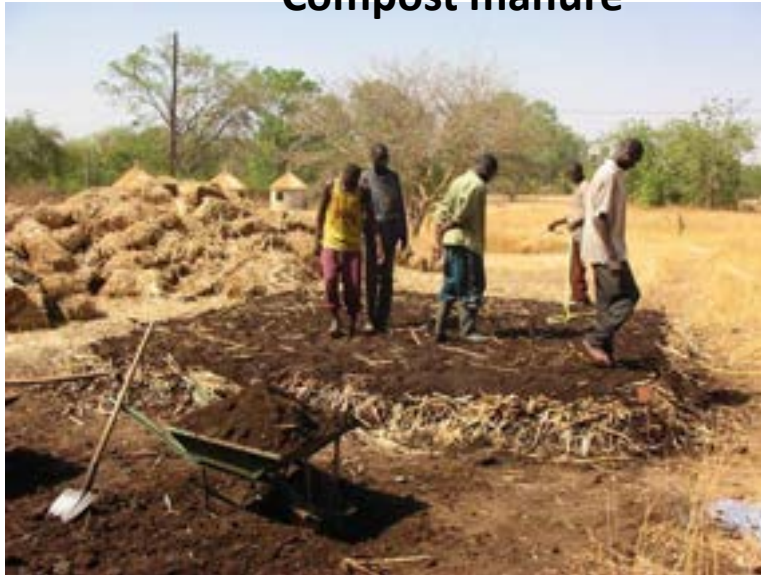
- zaï,
- stones lines,
- Magoye Ripper (from Zambia)
- to combine with use of compost manure
- Talya tray was a special choice of women for an experimentation on useful tree.
- Double use cowpea

TECHNOLOGIES SELECTED



ZAï

Compost manure



Rock bunds/Stone lines



MAGOYE RIPPING



RAINFALL OF ZIGA

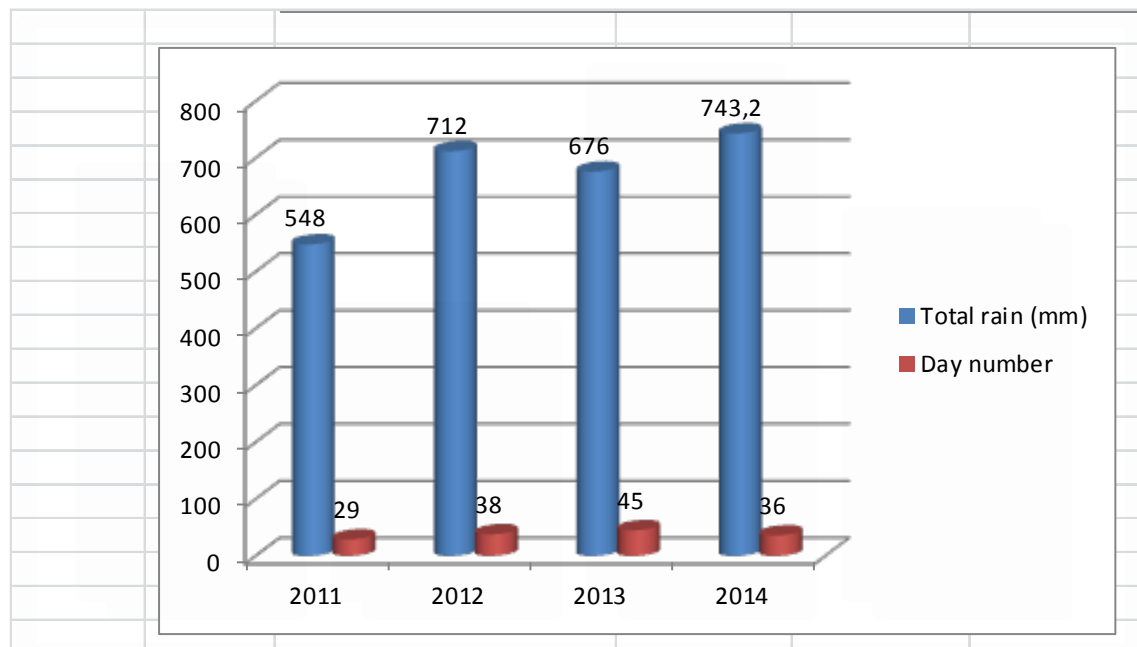


Figure 1:Seasonal Rainfall and day number of Ziga

RAINFALL OF SOMYAGA

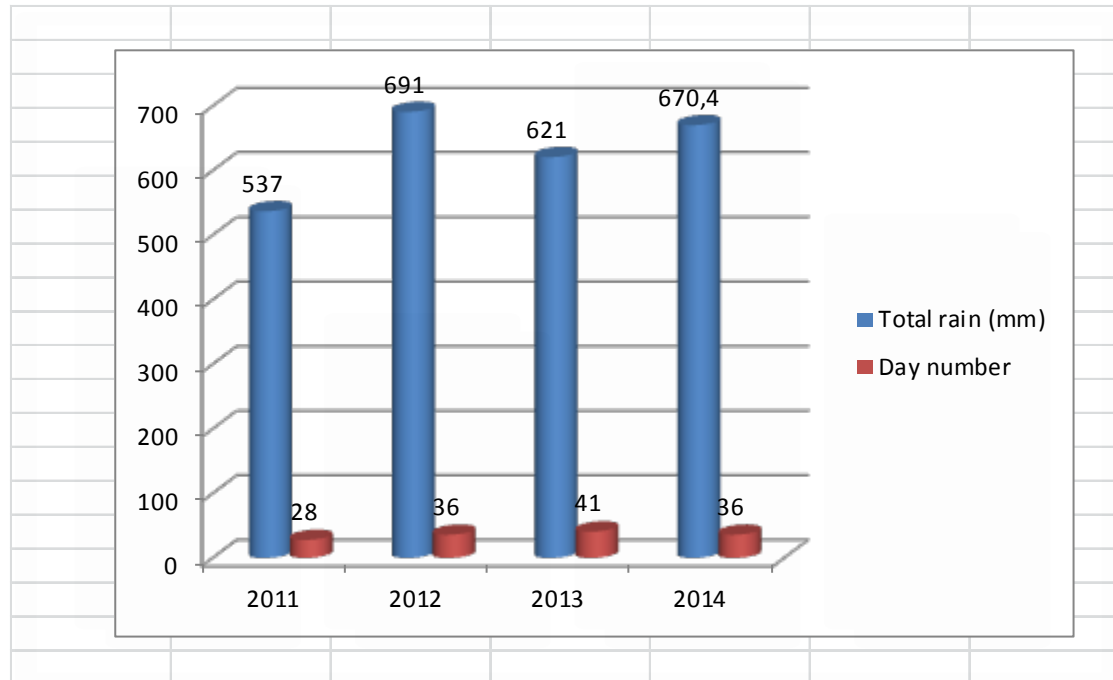


Figure 2: Seasonal rainfall and day number at Somyaga

The total rainfall varies from 537 mm to 670 mm at Somyaga. For Ziga, the rainfall is better 548mm and 743 mm. The total day number of rains varies from 28 to 41 at Somyaga and from 29 to 45 at Ziga. The distribution during the different rainy seasons is erratic with some drought periods and floods.



EXPERIMENTATION 1: Soil fertility management by using Zai and compost manure



Experimentation 1: Soil fertility management

The zaï is the WHT used in this experiment

Treatments

T0= Control= no WHT, no fertilization

T1= Zaï + 5 tons of compost manure (common practice in the region)

T2= Zaï + 5 tons of compost manure+ 62 kg/ha of NPK+ 50 kg/ha Urea (microdosing)

T3= Zaï + 5 tons of compost manure+ 100kg/ha of NPK+ 50 kg/ha Urea (recommended fertilization)



fertility management

Table 1 : Sorghum grain and straw yield (kg.ha⁻¹) at Somyaga

Treatments	Year 2011		Year 2012		Year 2013	
	Grain	Straw	Grain	Straw	Grain	Straw
T1	28c	179d	336 c	1288c	268c	1212d
T2	433b	1326c	1079 b	2755b	787b	2169c
T3	1018a	2857b	1588 a	4621a	1253a	2972b
T4	1142a	3589a	1857 a	4837a	1400a	3486a

Means in the same column with the same letter are not different according to the Newman Keuls test at 5% level.

T1=control treatment; T2=Zai+5t.ha⁻¹ of compost manure; T3=Zai +5t.ha⁻¹ of compost manure+62kg.ha⁻¹ of NPKSB+50kg.ha⁻¹ of urea;

T4 = Zai +5t.ha⁻¹ of compost manure +100kg.ha⁻¹ NPKSB +50 kg.ha⁻¹ of urea.

Impact of zaï use in the study site

- The grain yield of sorghum is low, 28kg/ha in the control plots.
- When using zaï the yield increase 433 kg/ha
- When mineral fertilizer by microdosing is applied with zaï, the yield increase 1000 kg/ha.
- With recommended fertilization by extension services, the yield increase at 1300 kg/ha



fertility management

Table 2: Sorghum grain and straw yield ($\text{kg} \cdot \text{ha}^{-1}$) at Ziga

Traitements	Year 2011		Year 2012		Year 2013	
	Grain	Straw	Grain	Straw	Grain	Straw
T1	72c	409c	408c	1382c	341d	1321c
T2	316b	1275b	926b	2468b	819c	2346b
T3	827a	2988a	1422a	2892a	1114b	3478a
T4	908a	3017a	1609a	2958a	1552a	3631a

Means in the same column with the same letter are not different according to the Newman Keuls test at 5% level.

T1=control treatment; T2=Zaï+5t. ha^{-1} of compost manure; T3=Zaï +5t. ha^{-1} of compost manure+62kg. ha^{-1} of NPKSB+50kg. ha^{-1} of urea; T4 = Zaï +5t. ha^{-1} of compost manure +100kg. ha^{-1} NPKSB +50 kg. ha^{-1} of urea.



Control



Zai+Compost manure plot



Zai+ Microdose plot



Zai+ recommended fertilization

Harvest period

EXPERIMENTATION OF SOMYAGA

Control plot



**Zai+
compost**



**Zai+
compost+microdosing**



**Zai+ compost+recommmanded
fertilisation**





Experimentation 2: Comparison of WHT

Two local WHT (stones bunds and zaï) compared to a New WHT (Magoye Ripper from Zambia) with microdosing

Treatments

T0= Control

T1= stones bunds + 5 tons of compost manure+ 62 kg/ha of NPK+ 50 kg/ha Urea

T2= Zaï + 5 tons of compost manure+ 62 kg/ha of NPK+ 50 kg/ha Urea

T3= Magoye + 5 tons of compost manure+ 62 kg/ha of NPK+ 50 kg/ha Urea



Results summary, WHT experiment

Tableau 3 : Sorghum yield (kg/ha) at Somyaga and Ziga, rainy season 2013
Means in the same raw with the same letter are not different according to the Newman Keuls test at 5% level.

Study site	Parameter	Control	Stone bunds	Zai	Magoye
Ziga	Grain	560c	992b	1840a	1672a
	Straw	1712c	3232b	4032a	3280b
Somyaga	Grain	360c	1130b	1820a	1740a
	Straw	1240c	3120b	3950a	4320a

A positive effect of Zai and Magoye on the grain yield (3 times the yield of control)



Results summary, WHT experiment, 2015

Study site	Parameter	Control	Half moons	Magoye	Zai
Ziga	Grain	151	1342	1408	1589
	Straw	652	2755	2892	3047
Somyaga	Grain	364	1127	1466	1692
	Straw	1011	2834	2976	3362



Results summary, WHT experiment

Table : Number of trees and seedling regenerated/ha at Somyaga et Ziga

Study site	Control		Stone bunds		Zaï		Magoye	
	2013	2014	2013	2014	2013	2014	2013	2014
Somyaga	0,5	1,6	19	26	34	39	13	22
Ziga	0,6	2,2	21	33	37	46	18	32
Trees \geq 1m		0		14		23		12

Magoye ripping at Ziga





Comparison of the different treatments at grain phasis

Control



Stones bunds

Magoye



Zai

Comparison of the different treatments at grain phasis



Control



Zai

Half moons



Magoye

Comparison of treatments



Improved variety



Panaromic view of experiment





Using the banka (Run off capturing) to improve maize productivity by supplement irrigation at Ziga, northwestern Burkina Faso





Using the banka (Run off capturing) to improve maize productivity by supplement irrigation at Ziga, northwestern Burkina Faso

The northwestern part of Burkina is not a traditional maize production area. But the farmers do like this crop.

Objectives

- ✓ To evaluate the use of banka for supplement irrigation
- ✓ to improve the maize yield through supplement irrigation
- ✓ to improve the nutrients management by farmers

2- Variety

The improved variety of Maize called “Barka”, is used in this experiment est “Barka”, It is a composite maize variety well adapted to the drought



Results summary, Banka experiment, 2015

Yield of maize (kg/ha), Ziga

Study site	Parameter	Control	Magoye	Zai
No irrigation	Grain	682	4253	4712
	Straw	2100	6832	7482
Irrigation	Grain	2634	7353	6948
	Straw	4078	8635	8422

Supplement irrigation with Banka



Spraying
irrigation





Control



Magoye plot



Zai plot

PARTICIPATIVE EVALUATION OF DIFFERENCES BETWEEN TREATMENTS



Control



Magoye



Zai

COWPEA EXPERIMENT

Stones lines with cowpea (*Vigna Unguiculata*)

This experiment is for only women and Young persons

- Stones lines+ local cowpea variety
- Stones lines+ improved variety K VX 396
- Stones lines+ improved variety K VX 745

All the plots received recommended fertilization (100 kg/ha NPKSB).

Comparison of treatments



Improved variety



Local variety

Experimentation 4: Double use variety of cowpea



Women want to develop the production of leguminous using WHT



Improved variety



Harvest period

COWPEA EXPERIMENT

It is important to use appropriate variety to fight against *Striga gesnoroides*. The innovator Ousseni explains the negative effects of striga on local varieties.



Field day visit



Field visit have been organized at Somyaga and Ziga to present the experiment and the objectives of the Wahara project. Two field visits in September 10th and October 29th 2015 were also organized.

Talya tray demonstration



**Tal ya is an irrigated technology brought par META META Team.
The demonstration has been made on two useful trees , *Lannea microcarpa* (raisinier) and *Adansonia digitata***

Talya tray demonstration



Tal ya tray with a young mango tree a Somyaga

Restitution of results



It was the occasion to share the results after analysis and to have some ideas to improve the next coming experiment.

Training

The training of women and men on theories and practices of WHT is essential to have an extension after obtaining some results



Specific training for women using zai to rehabilitate trees in particular medicinal plants.

The practical training



The training of farmers consists on demonstrations of how to install some WHT. To strengthen the capacities of farmers to produce compost manure is the best way to improve the soil fertility management trough WHT.

Learning par playing:Theater

After experimentation, we do include diffusion by theater to give the message to more people.



Theater



For the diffusion of good practices, we used the theater to give messages to the public (zaï, magoye, compost manure). We distributed the technical documents and manuals to the participants.



The ecdpm has made an evaluation in november of projects financed by European Union and Wahara was concerned. We do make a presentation of the results during the four years. The main recommandation is to increase the number of beneficiaries.

Supplement work on Magoye ripper/Kapandula



It consist on using a new ripper called Kapandula furnished by Zambian Team/Piet. The new material is adapted for one animal traction (donkey). We organized six sessions of training of 60-80 farmers/session for Ouahigouya, Masbore, Ziga and Somyaga for dissemination of Magoye, zai.

TRIAL of Magoye/Kapandula Ripper

N° ordre	Villages	Outils	Distance écrous (cm)
1	Soumyaga	Charrue	13,4
2	Ziga	Charrue	8,4
3	Ziga	Charrue	8,4
4	Ziga	Charrue	8,6
5	Ziga	Charrue	8,4
6	Ziga	Charrue	8,4
7	Ziga	Charrue	8,6
8	Gassan	Charrue	10,5
9	Tougan	Charrue	8,6
10	Ziga	Charrue	8,6
11	Ziga	Charrue	8,4
12			

We make a training of artisans to produce the ripper (magoye, kapandula).





TRIAL of Magoye/Kapandula,



We do make a training of artisans to produce the ripper (magoye, kapandula). We have done many specific training of women and young persons for the use of the ripper.

RADIO AND TV



- *We used radio and TV to diffuse message to a large public.*
- *The objectives are to have a support which can be used for diffusion and the training of the farmers.*
- *Exchanges between farmers, extension services, NGO, Farmer Association and researchers at the local radio at Ouahigouya.*



Conclusions

The activities of experiment have been done with a satisfecit

- *Zai, Magoye Ripper have demonstrate a good potential to improve the crop yield.*
- *Zai and stones bunds are more efficient for tree regeneration.*
- *The Magoye Ripper reduces the time for soil preparation at the beginning*
- *Most technologies have an impact on soil carbon content and Nitrogen*
- *The use of supplement irrigation though banka is a good option to improve the resilience of the people*
- *Necessity of a lobbying to diffuse the results in particular the technical documents in collaboration with interested stakeholders (extension services, NGO, projects, farmers organisations).*
- *A contact with development project to help the artisan to produce the new ripper..*



ADOPTION OF WATER HARVESTING TECHNOLOGIES TO IMPROVE FOOD SECURITY IN THE CONTEXT OF CLIMATE CHANGE



THANK YOU