Strategic Application of Fertilizers (Micro dose) for Small Farmer Prosperity in the Sahel

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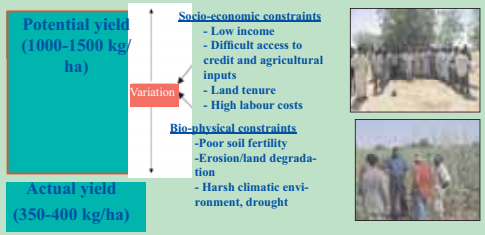
PARTNERS

Burkina Faso
Farmers,INERA, FNGN, ADRK, HUNGER PROJECT
Mali
Farmers, IER, WINROCK International, SG 2000, ADAF-GALLE
Niger
Farmers, INRAN, FAO Projet Intrants
IARC
ICRISAT, TSBF/CIAT, IFDC
Donateur
USAID

Introduction

- Growth rate (3%/year, double every 25 years); consequence is pressure on the land
- Harsh environment; low and erratic rainfall : 350-700 mm/year; Inter and intra yearly rainfall fluctuations
- Recurrent drought
- Inherent poor soil fertility and increasing land degradation
- Socio-economic constraints (high costs of inputs and labour, etc.)
- Main staple foods/cereals: sorghum and millet in an unfavourable environment (productivity decreased from 450- 500 kg/ha in 1960 to 350-400 kg/ha in 1990



Objecti-

- Strengthen sustainable community-based farmer organizations in the target regions
- Assist in human resource development through technical training
- Test and demonstrate the strategic hill application of fertilizer (micro-dosing technology) for improving productivity
- Conduct monitoring and evaluation for increasing impact
- Identify policy and investment options that ensure optimal use of natural resources at the landscape scale

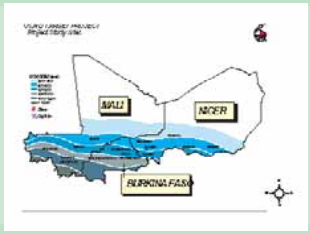
Methods

- Demonstration and tests in farmers fields with the active participation of farmers.
- Strengthening of institutional capacities (farmers associations, micro-credit system, etc..)
- Technical backstopping and training in the implementation of the « Warrantage » or inventory credit system
- Buidling a network of different partners in the implementation of the project activities

Experimental protocol Demonstration plots were established and managed by volunteer farmers. Research, extension and NGO staff were involved in providing technical backstopping. Each demonstration plot consisted of:

- The plot sizes varied between 300 and 600 m^2.
- Burkina Faso and Mali: 3 plots with the following treatments: Control (No fertilizer); 4 g NPK (17:17:17) per hill; and 100-120 kg/ha NPK (17:17:17) broadcast + top dressing with 50 kg/ha urea 3 to 4 weeks after sowing.
- Niger: 4 plots with the following treatments: Control ; 6 g NPK (15:15:15) per hill; 2 g DAP per hill; and 2 g DAP per hill + 1 g urea per hill 3 to 4 weeks after sowing.

Project study sites



Demonstrations and field tests were conducted in three countries (Burkina Faso, Mali and Niger). The project study sites were chosen based on the biophysical and socio-economic characteristics of the areas covered by the NGOs involved in the project. Soils are sandy and of low fertility .

Hill Placement of fertilizer on millet and sorghum The technology of strategic application of fertilizer consists of applying small quantities of fertilizer in the hill of plants.
This technology enables a substantial increase in crop yields with little investment in mineral fertilizer.

Training Training is a key element in ensuring the sustainability of the technology and the dynamics initiated in this project. Training is done through:

- Interactions with the rural communities, farmers organizations, demonstrations and workshops.
- Exchange visits among the farmers organizations and NGOs from the three participating countries

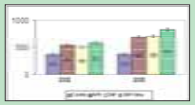

Training on warrantage, Tissala, Mali


Farmers from Burkina Faso visiting service center, Bokki, Niger.

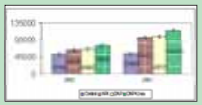

NGOs and farmers from Burkina Faso visiting a grain storage store, Dantchandou, Niger.

Results

Grain Yields (kg ha $^{-1}$) of millet Control and Micro-Dose , Niger, 2002 & 2003

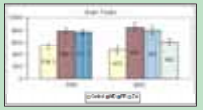


Net gains in F CFA, from millet grown under fertilizer Micro-dosing and Farmers practice, Niger, 2002 & 2003

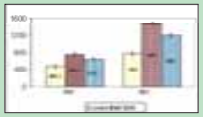


Grain Yields (kg ha $^{-1}$) of sorghum : Control, Micro-Dose (MD) and Recommanded Rates(RR), Mali, 2002 & 2003

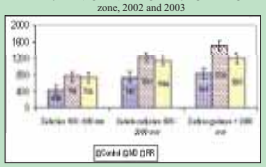
Grain Yields (kg ha $^{-1}$) of sorghum Control, Micro-Dose (MD), Recommanded Rates(RR) and Zai, Burkina Faso, 2002 & 2003



Grain Yields (kg ha $^{-1}$) of millet : Control, Micro-Dose (MD) and Recommanded Rates (RR), Mali, 2002 & 2003

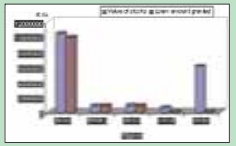


Grain yields (kg ha $^{-1}$) of sorghum by Agro-ecological zone, 2002 and 2003



5 status of warrantage credit system in Mali, 2002-2004

Status of warrantage credit system in Niger, 2003/2004



Inventory Credit System ("Warrantage")

1. At harvest, farmers organizations stock their products (grains) in stores as guarantee.

2. Farmers and the bank each place a padlock on the stores door

3. The bank gives a loan equivalent to the price of the products (grains) at harvest

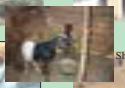
4. With the loan, the farmer undertakes an income generating activity (IGA): Dry season cropping, fattening, horticulture

5. Using the profits from the IGA, farmers reimburse the loan; the bank then releases the grains from the store, which have increased in value during the period of storage.


Horticulture/Market Garden.


Inputs shop


Groundnut oil extraction


Sheep fattening


Blacksmith

Conclusion

- Overall , grain yields of millet and sorghum were greater (43 to 120 %) when using the strategic hill application of fertilizer than with the earlier recommended and the farmers practices.
- Preliminary results indicate that the income of farmers using the technology increased by 52 to 134 %
- Significant net profits were obtained by the farmers using the « Warrantage" or inventory credit system
- Farmers associations were strengthened through the various project activities (viz. training and various technical backstopping activities

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