Mozambique

Maize Intensification in Mozambique (MIM)

Project Overview
June 10, 2009

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MIM SPONSORS

The International Fertilizer Industry Association

ifa

IPNI International Plant Nutrition Institute

International Potash Institute

TSI The Sulphur Institute

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MIM BACKGROUND

- Mozambique is a low-income developing country with 80% of the population engaged in agriculture.
- Agriculture is dominated by the small-farm, familiar sector with subsistence production in small areas of around 1-5 ha.
- Maize and cassava the most cultivated crops.
- Agricultural productivity remains low with an average of less than 1 ton/ha for cereal crops

MIM PURPOSE

- Help Mozambican smallholder farmers improve their livelihoods by intensifying their maize production through the use of fertilizer and other inputs (improved seed and crop protection products)

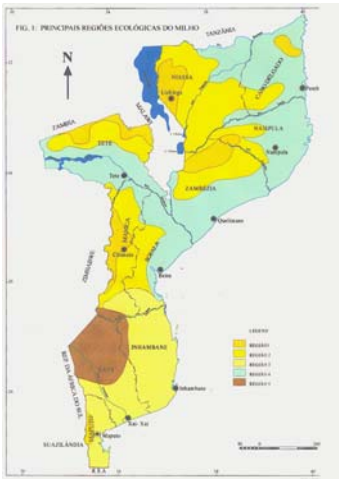
Maize Productivity

- Agricultural productivity remains low with an average of less than 1 ton/ha for cereal crops
- The total area planted to maize in Mozambique is about 1.5 million hectares.
- Farmers currently apply, on average, only about 1 kg/ha of fertilizer – Most do not use any.
- Less than 10% of small farmers use improved seed (for maize, mostly OPVs)
- use of CPPs is mostly on cash crops such as cotton, tobacco, and sugarcane – Not Maize.

MOZAMBIQUE-MIM

- Objectives for Year 1
  - Identify 5 clusters of +/- 50 maize farmers each in the Central and Northern Regions of Mozambique
  - Introduce them to the use of fertilizer, improved seed varieties and best management practices through participation in completion of field demonstrations.
  - Introduce them to agri-inputs suppliers that can sell them the inputs
  - Introduce them to grain buyers that can purchase their output at harvest
  - Introduce the technologies to their neighbors through field days

Maize Productions Zones



Region 1. High Potential

Region 2. Reasonably High Potential

Region 3. Medium Potential

Region 4. Low Potential

Region 5. Maize Not Recommended

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MIM FARMER GROUPS

Cluster	District	Association Covered	Date of Planting / Harvesting
1	Gondola	KK-Ripongue Association	December 23, 2008 May 7, 2009
	Manica	Cufuma Ichungo Association	December 29, 2008 June 2, 2009
2	Gorongosa	Nhauranga Farming Association	November 18, 2008 Not Harvested
	Nhamatanda	Fambizanai Association	December 22, 2008 May 8, 2009
3	Murrupula	Siveleque Association	December 16, 2008 May 19, 2009
	Malema	Eduardo Mondlane Association	November 25, 2008 April 16, 2009
4	Alto Molocue	Mugema Seat Association and June 25 Association	December 20, 2008 May 20, 2009
5	Gurue	Stop Poverty Association	November 27, 2008 April 14, 2009

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Treatments

(Same Comparisons in All Locations)

Treatment No.	Basal Fertilizer	Top-dress Fertilizer	Maize Seed
1 (Control)	None	None	Farmer's Saved Seed
2	12-24-12-0S (300 kg/ha Basal)	Urea (150 kg/ha Topdress)	Farmer's Saved Seed
3	12-24-12-0S (300 kg/ha Basal)	Urea (150 kg/ha Topdress)	Hybrid (PAN 67)
4	12-24-12-0S (300 kg/ha Basal)	Urea (150 kg/ha Topdress)	OPV (Matuba)
5	12-24-12-6%S (300 kg/ha Basal)	Urea (150 kg/ha Topdress)	Hybrid (PAN 67)
6	12-24-12-6%S (300 kg/ha Basal)	Urea (150 kg/ha Topdress)	OPV (Matuba)

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Weed Control

Demo Plot After 1st Weeding

Demo Plot After 2nd Weeding

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Gondola
Manica Province – Beira Corridor

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Gurue
Zambezia Province – Nacala Corridor

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Manica
Manica Province – Beira Corridor

- Farmers working on plot in Manica

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Gorongosa
Sofala Province – Beira Corridor

Farmers on planting day in Gorgongosa

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Alto Molocue
Zambezia Province – Nacala Corridor

Farmer's Saved Seed – No Fertilizer

Farmer's Saved Seed – With Fertilizer

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Gurue
Zambezia Province – Nacala Corridor

Alberto Antonio Shop -- Lioma

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Murrapula
Nampula Province – Nacala Corridor

12-24-12 + 6% Sulfur

12-24-12 -- No Sulfur

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Field Day in Nhamatanda

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Field Day in Nhamatanda

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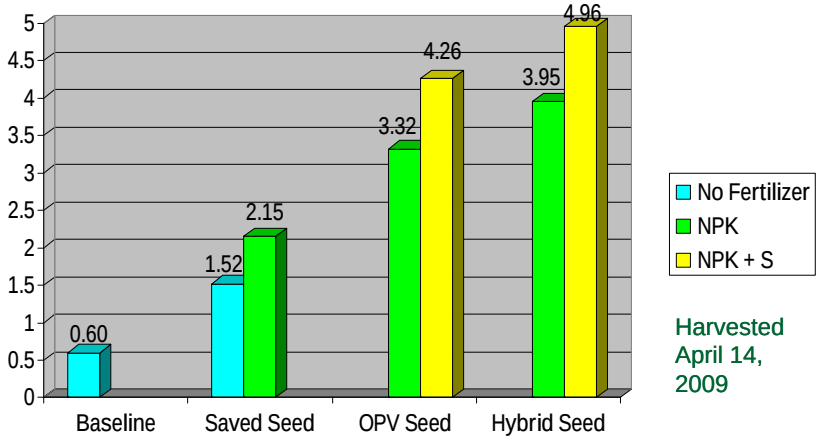
Grain Yield Response of Maize Varieties to Application of Fertilizer in Gurue



Harvested April 14, 2009

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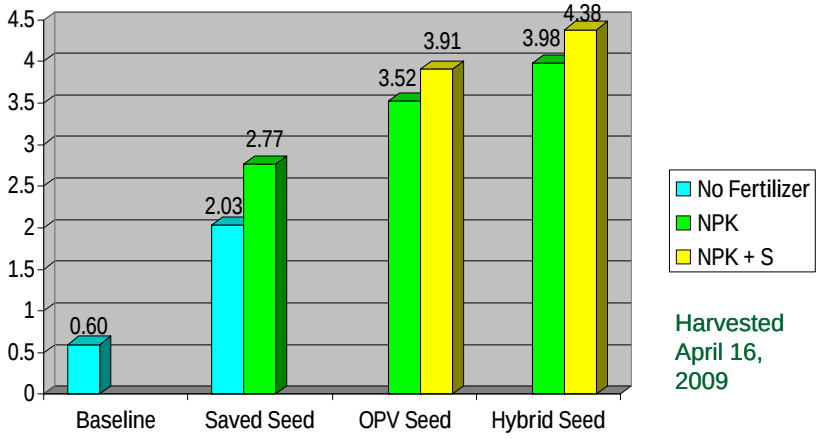
Grain Yield Response of Maize Varieties to Application of Fertilizer in Malema



Harvested April 16, 2009

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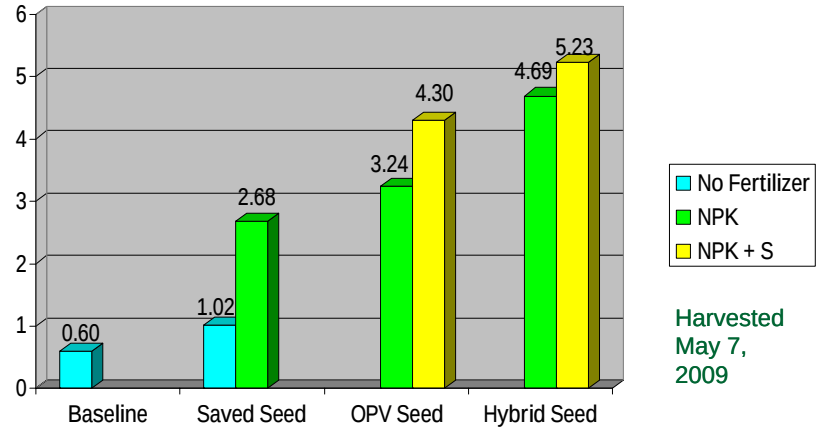
Grain Yield Response of Maize Varieties to Application of Fertilizer in Gondola



Harvested May 7, 2009

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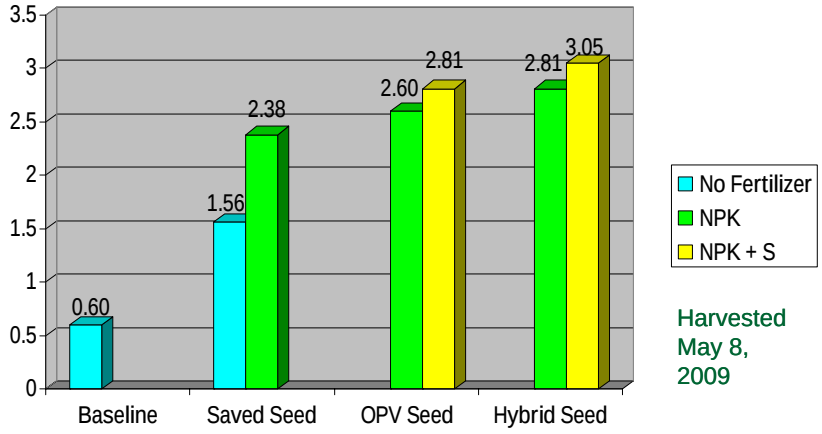
Grain Yield Response of Maize Varieties to Application of Fertilizer in Nhamatanda



Harvested May 8, 2009

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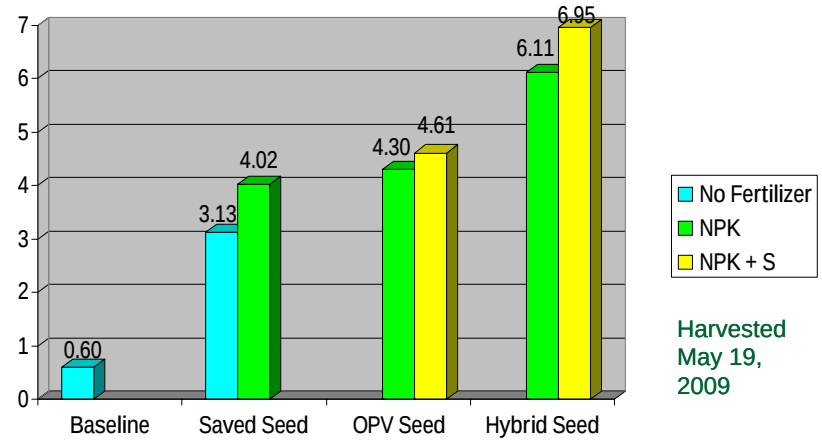
Grain Yield Response of Maize Varieties to Application of Fertilizer in Murrupula



Harvested May 19, 2009

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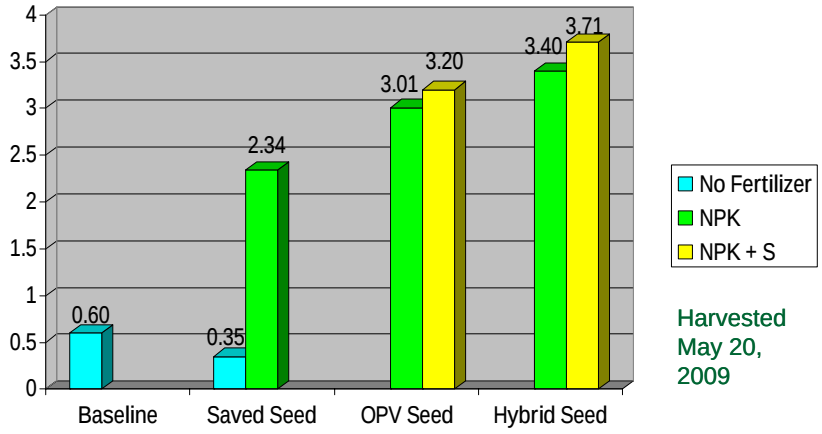
Grain Yield Response of Maize Varieties to Application of Fertilizer in Alto Molocue



Harvested May 20, 2009

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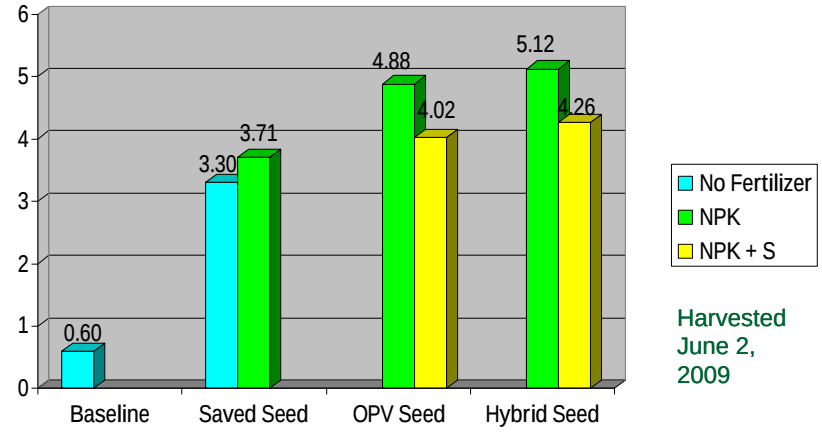
Grain Yield Response of Maize Varieties to Application of Fertilizer in Manica



Harvested June 2, 2009

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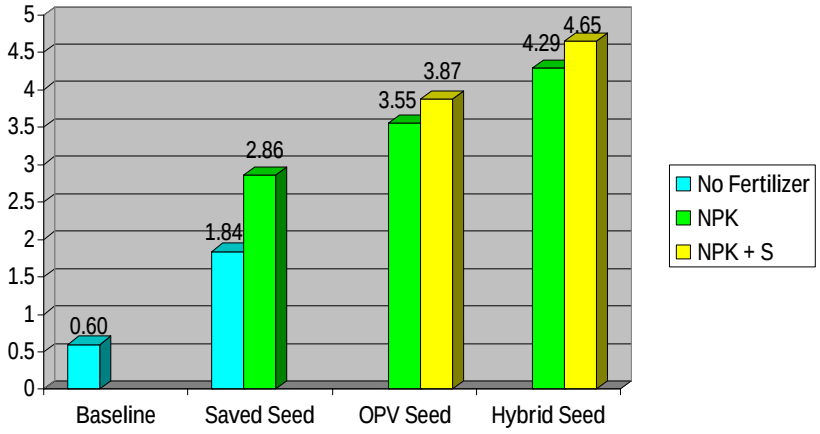
Grain Yield Response of Maize Varieties to Application of Fertilizer (Avg of Seven Sites)



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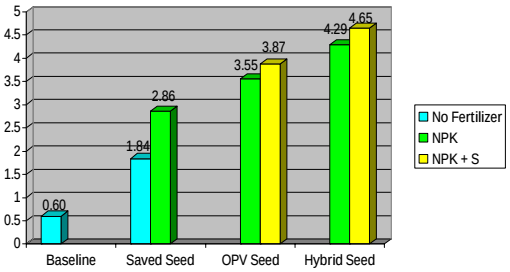
Observation 1: Control Plot

1. The yield obtained inside the plot area from saved seed, traditional management and no fertilizer was clearly the lowest of any of the other treatments (averaging 1.84 mt/ha).
2. It was, however, higher than farmers typically achieve in the surrounding area with their saved seed, which averages only around 0.6 mt/ha.
    1. Improved weeding
    2. Improved pest control



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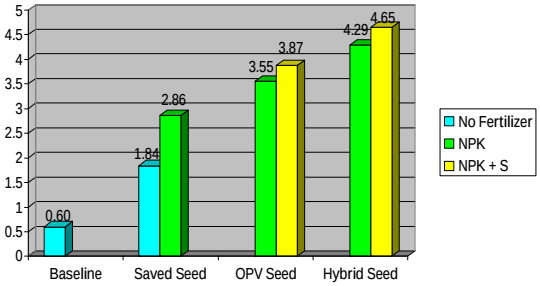
Observation 2: Fertilization of Saved Seed

1. The average yield obtained from saved seed as a consequence of adding fertilizer increased to 2.86 mt/ha.
2. Even with saved seed, therefore, fertilization increased the yield by 55%.



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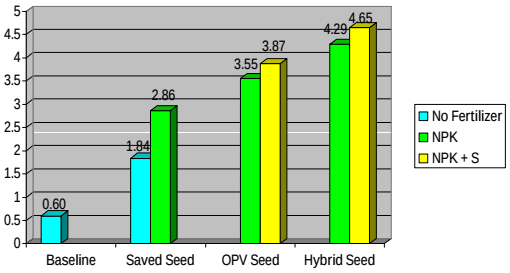
Observation 3: Hybrid > OPV > Saved

1. Important increases in yield were obtained by moving from saved seed (2.86 mt/ha) to OPV seed (3.55 mt/ha) and then to Hybrid seed (4.29 mt/ha) even though all three received identical fertilizer (12-24-12-0 + urea) and cultural management.
2. On average, OPV seed produced 102% more grain than the unfertilized check plot and Hybrid seed produced 143% more grain than the unfertilized check plot.



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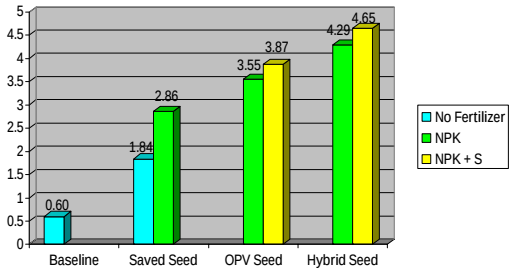
Observation 4: Addition of S to the N-P-K

1. The use of an S-containing N-P-K formulation also resulted in increased yield. With all other factors held uniform, the addition of S to the 12-24-12 formulation resulted in an average 8-9% higher yield with both OPV and Hybrid seed.



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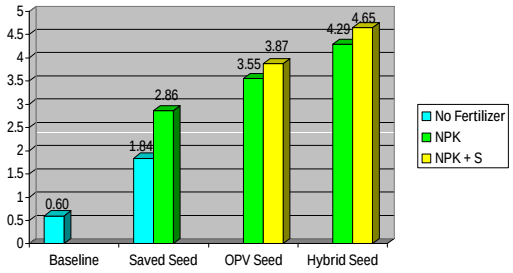
Observation 5: Best Average Yield

1. The highest average yield obtained in the demonstration area (4.65 mt/ha) was achieved when Hybrid seed was planted and it was fertilized with a formulation that included N-P-K and S. This was 3.60 mt/ha more than the national average yields (343%) and 1.79 mt/ha more (160%) than the unfertilized treatment at this demonstration site.



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Plans for Next Season

- Perform an economic analysis of first years activities
- Replicate the work to validate the first year's results
- Base next years fertilizer doses on soil sampling
- Continue farmer days, and establishment of linkages of farmers to input dealers and maize buyers
- Document the project with success stories and leaflets on best agricultural practices
- Link MIM to the AGRA project and to the upcoming voucher program.
- Use MIM's results to identify best practices for the Government Maize Intensification Program
- Build MIM into a next USAID project, allowing to scale the results out to reach more farmers

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MOZAMBIQUE - MIM COORDINATORS

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Thank you !

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