Participatory Integrated Pest Management for Increased Cowpea Production in Northern Ghana

Taking Cowpea to Scale In West Africa

USAID–Cowpea Project

By Francis Kusi

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Outline of presentation

- Introduction
- IPM concept introduced to the farmers
- IPM demonstrations implemented
- Results and discussion
- Conclusion and recommendations

Introduction

The quest to reducing poverty and malnutrition by moving innovations out of laboratories or research stations unto smallholder farms - The USAID Cowpea Out-scaling Project

Introduction

- Cowpea is an important source of protein for human and animal nutrition in many parts of the semi-arid tropics
- Cowpea yields at farmers' levels in Northern Ghana are low and the yield reducing factors include insect pests, Striga infestations and low adoption of recommended or improved production methods

- IITA in collaboration with CSIR-SARI and other partners through the USAID Cowpea Out-scaling Project are disseminating improved cowpea varieties together with production and processing technologies in 152 communities in northern Ghana

Introduction

- Among the technologies being promoted to increase cowpea productivity for increased food security is the participatory Integrated Pests Management technologies
- The strategies include:
- Host plant resistance in controlling *Striga gesnerioides*
- Good agricultural practices in combination with minimum insecticide application and
- Recommended Planting dates for each of the major agro-ecological zones in northern Ghana

IPM concept introduced to the farmers

The working definition

The use of MULTIPLE TECHNIQUES in a coordinated program to maintain pest populations below levels that cause economic injury while also minimizing negative side effects

IPM concept introduced to the farmers

Features of IPM that were highlighted

- A decision making process
- A risk reduction system
- Information intensive
- Cost effective
- Site specific

IPM concept introduced to the farmers

Different human responses to pest infestation

1.Don’t check – Ignorance

2.Check, and ignore - Foolish, or wise

3.Check, and spray insecticides - Can be expensive, is unsustainable

4.Check, respond as needed - Integrated

(source: MSU short course in IPM)

IPM demonstrations implemented

- **Treatments for Demo 1:_ Spray regime**
- T1 = Farmer practice
- T2 = Spray twice (flower initiation and early pod formation)
- T3= Scout and spray

Apart from the spray regimes, all other agronomic practices were the same for all the plots

IPM demonstrations implemented

- **<u>Treatments for Demo 2: Striga management using host plant resistant</u>**
- T1 = Apagbaala
- T2 = Songotra
- T3 = Farmer variety

- Apart from the varieties, all other agronomic practices were the same for all the plots

IPM demonstrations implemented

Treatments for Demo 3: effect of planting date on pest and diseases incidence

- T1 = Third week to end of June
- T2 = Mid to third week of July
- T3 = First to mid August

Apart from the dates of planting, all other agronomic practices were the same for all the plots

Strengthening the capacities of the farmers to adopt the IPM strategies through training at the demonstration sites

Training at the establishment of the of the demonstrations

- Site selection
- Good land preparation
- Seeds- improved quality seeds, suitable variety at time of planting and area
- Planting – Recommended planting time and spacing
- Seed treatment

Strengthening the capacities of the farmers to adopt the IPM strategies through training at the demonstration sites

Training on scouting for and management of major insect pests and disease at seedling and vegetative stages

- Cowpea aphid
- White fly
- Root rot disease

Strengthening the capacities of the farmers to adopt the IPM strategies through training at the demonstration sites

Training on scouting for and management of major insect pests at flowering and podding

- Thrips
- Maruca
- Striga
- PSBs

Results and Discussion

Effect of Striga infestation on performance of different cowpea varieties

Treatment	Plant stand with Striga	Grain Yield/ha (Kg)	Dry Biomass/ha (Kg)
Farmer variety	64.8	514	2284
Apagbaala	60.1	773	2407
Songotra	0.6	1063	3593
Mean	41.8	783	2761
SED	4.87	87.1	321.9
CV (%)	24.7	23.6	24.7

Results and Discussion

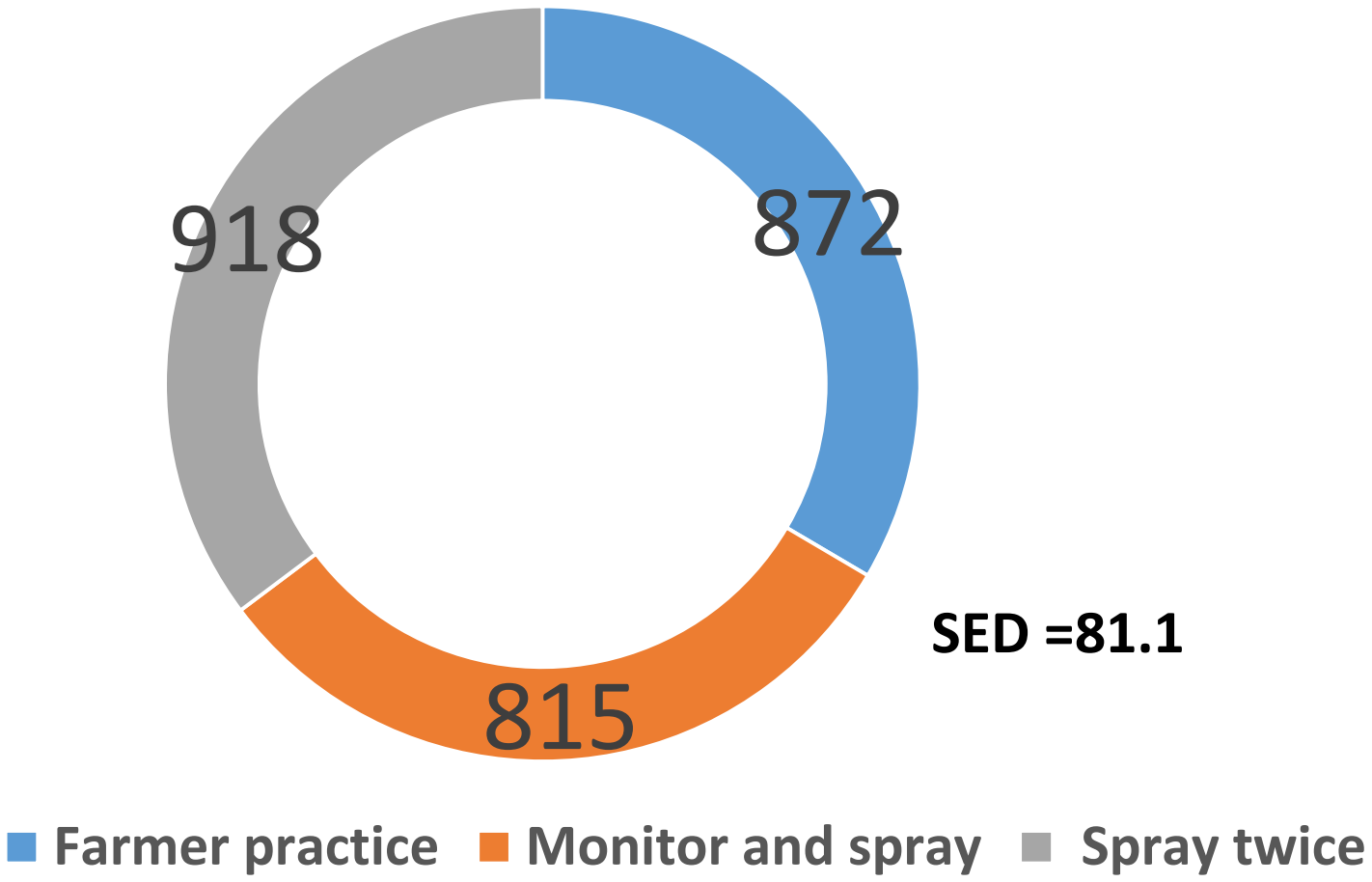

Fig .1. Effect of different spray regime on grain yield/ha (Kg)

- The was no significant difference among the three spray regimes
- However, the farmer pray was just like calendar spray where farmers spray regularly between every 10 to 14 days.
- The scout and spray was had between 2 to and 3 sprays depending on whether there was serious aphid infestation or not
- Therefore the spray twice treatment was more economically feasible

Results and Discussion

Effect of date of planting on incidence of pests and grain yield

Treatment	Plant stands with aphid	Thrips/ flower	Plants with root rot	Grain Yield/ha (Kg)
3rd wk – end of June	1.4	6	23.25	719
Mid July – 3rd wk of July	1.8	7	6.12	1160
1st – 2nd wk of Augt.	19.5	17	2.25	687
Mean	7.5	9.79	10.54	856
SED	3.12	2.1	2.23	66.7
CV (%)	82.9	42.1	42.30	15.6

The Mid and third week of July recorded significantly higher grain yield (kg ha^{-1}) and low incidence of insects and disease

The third and the last plantings suffered from high incidence of disease and insect pests respectively, resulting in low grain yield (kg ha^{-1})

Conclusion and recommendations

- Songotra was found to be stable in Striga endemic areas
- Too early and too late planting is not recommended for cowpea in UER of Ghana
- If the seedling stage of cowpea does not coincide with dry spells, then spraying twice at flowering and pod formation could give protection comparable to praying thrice or more
- Research program should be initiated to improve the resistance of Songotra to root rot disease
- And the songotra seed also need to be cleaned, because the few plants found with Striga could be as a result of mixture

Thank you