

Kirkhouse Trust Annual Meeting 2023

Livingstone, Zambia

Cowpea Field Trials at Mochipapa Research Station

Team:

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2. Velindah Chibomba
3. Dickson Matembele



Introduction:

□ Breeding programme

❖ Objective

- to improve cowpea productivity and production among smallholder farmers in Zambia through use of improved varieties.



❖ **Specific Objectives**

- to develop cowpea cultivars
 - ✓ pest and disease resistant,
 - ✓ early maturing,
 - ✓ drought tolerant and
 - ✓ high yielding



Current Activities

- Germplasm acquisition
- Screening of Parent materials
- Hybridisation
- Evaluation of Progenies
- ZARI-Kirk Evaluation Trial
- Evaluation of Cowpea Mutants



1. Germplasm acquisition

- ❑ Zambia National Genebank
- ❑ IITA Nigeria
- ❑ CSIR-Savanna Agricultural Research Institute, Manga Research Station, Ghana
- ❑ Institute of Agricultural Research for Development (IRAD), Cameroon
- ❑ Environmental Institute and Agricultural Research, Burkina Faso
- ❑ University of Agriculture, Makurdi (UAM), Nigeria



2. Screening for Parental Materials

- Main objective is to identify parental materials for use in hybridization.
- Two sets of Twelve (12) lines
- RCBD



3. Hybridisation

- ❑ The objective of this activity is to generate progenies.
- ❑ North Calorine II (NCII) mating design
- ❑ Two female (Namuseba and Lutembwe)
- ❑ Five males: ZM3042, ZM3001, Mtilizi, Sy 2-1 & Sp 4-1



4. Evaluation of Progenies

□ The objective of this activity is to generate progenies.

□ Breeding method

❖ Bulking method (F_4)

❖ Single Seed Descent

➤ 40 lines

➤ 2022/2023 planted single pods



Collaborative Trials

- Evaluation of Cowpea Mutants
(Namuseba and Mtilizi)
- ZARI-KIRK Cowpea Field Trials

Evaluation of Namuseba and Mtilizi Mutants

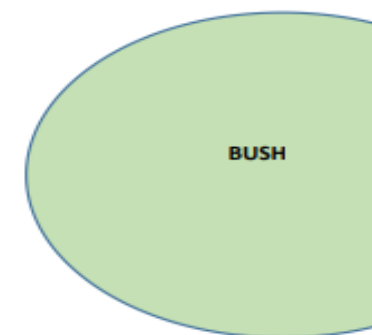
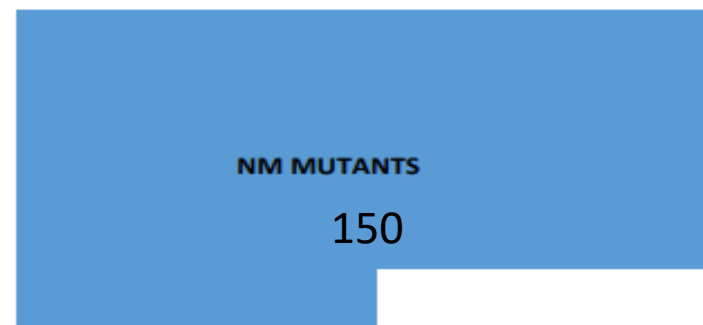
☐ 587 lines

Cowpea Mutants Layout

Site: MOCHIPAPA RESEARCH



Cowpea Seed multiplication



Cowpea Seed multiplication

ZARI- KIRK Cowpea Field Trial



❖ Evaluating the performance of cowpea lines in Zambia

- for use as parental materials
- variety release

- ❖ Ghana - 21 lines
- ❖ Cameroon - 2 lines
- ❖ Nigeria - 6 lines
- ❖ Burkina Faso - 20 lines

- RCBD
- Planted: 12/01/2023



Management of trials

☐ Record keeping

- ❖ Printed data collection sheets
- ❖ Electronic data sheets



☐ Labelling

- ❖ Treatments

Cameroon Field Trial

Date:

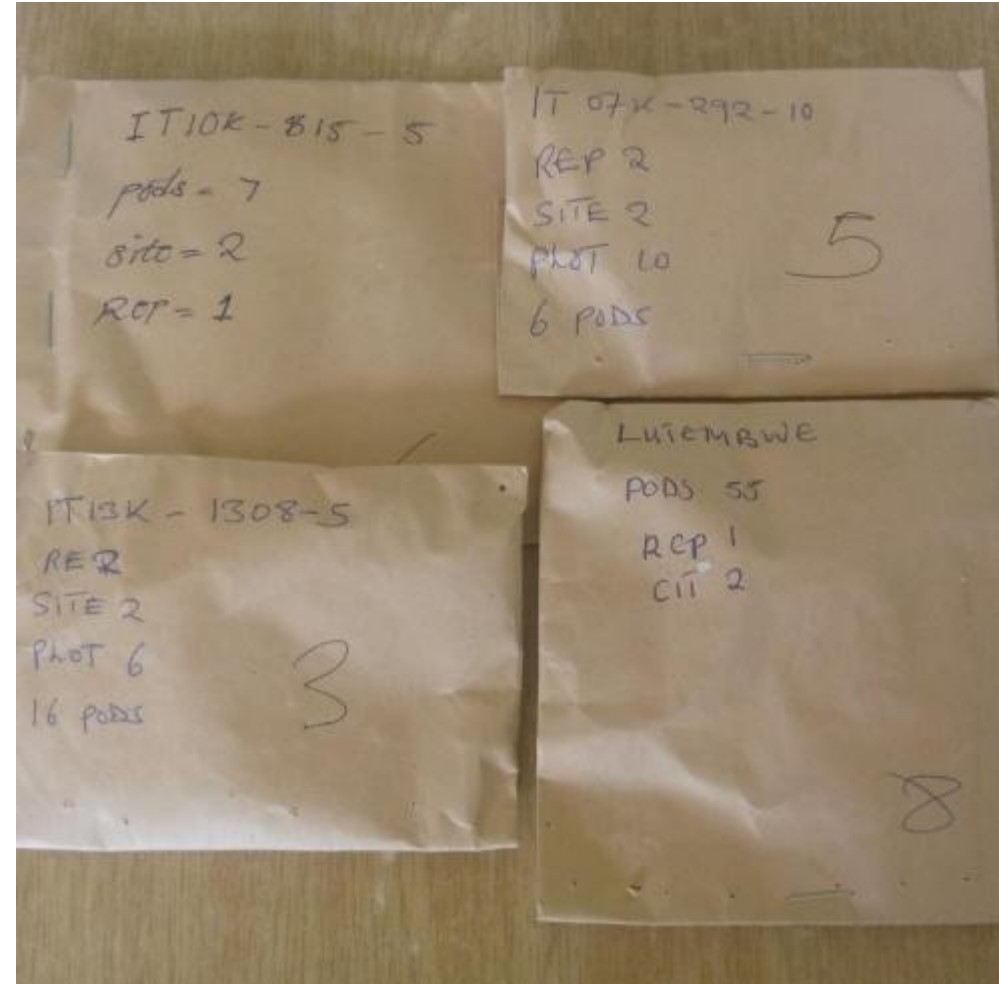
plot #	Rep	Treatment	# of Plants	Vigor, 1,2,3	Flowering, date		Podding, date		Diseases, 1-5					Pests, 1-9				
					1 st	50%	1 st	50%	Red leaf spot	antracnose	Abmosaic	Leaf blight	Aschochyta	Pod borers	white flies	Blister beetles	Aphids	Leaf miner
1	1	IRA5-MA-02																
2	1	IRA5-MA-33																
3	1	Lutembwe																
4	1	Namuseba																
1	2	IRA5-MA-33																
2	2	Namuseba																
3	2	Lutembwe																
4	2	IRA5-MA-02																
1	3	Namuseba																
2	3	IRA5-MA-33																
3	3	Lutembwe																
4	3	IRA5-MA-02																

Planted:

Site:

Seed Handling

- Handling of seed stock
 - ❖ Seed is treated with storage protectant (shumba dust)
 - ❖ Stored in paper/plastic/polypropylene bags
 - ❖ small quantities are stored in the fridge
 - ❖ large quantities are stored in the store room.



Challenges

- Lack of facilities
 - ❖ Glasshouse/greenhouse
 - ❖ Laboratory
 - ❖ Appropriate seed storage facility
- Rain-fed research
- Limited funding



Researching Soils, Crops and
Water in Zambia

THANK YOU

Kirkhouse
Trust Supporting research and education
in the biological sciences

25th February, 2023
Mochipapa Research
Station

