



AFRICAYAM PLANNING AND ADVANCEMENT MEETING



BY
Prof. Emmanuel Otoo
Chief Research Scientist

Presentation outline

❖ Yam Improvement Programme

- Activities carried out in 2021
- Planned activities for 2022

❖ Publications

Challenges 2021

Repair of our farmhouse

Portable water at farm house

Training at all levels

Staff especially replacing the retirees

Core Research Team

Prof. Emmanuel Otoo	-	Yam Breeder
Dr. Kingsley Osei	-	Plant Pathologist
Dr. Joseph Adomako	-	Plant Pathologist
Richard Dormatey	-	Yam Breeder
Nana K. Sakyi	-	Permanent Staff
Mr. Kwadwo Alhassan	-	Technician
Ms. Irene Dufie	-	Technician
Mr. Job Owusu	-	Technician
Mr. Yahaya Seidu	-	Field staff
Ms. Matilda Boakye	-	Field staff
Charles Atta	-	Field staff
Edna Mariam Ackah	-	Permanent Staff

Presentation Outline

- Highlights of activities undertaken in 2021
 - Objectives
 - Results and implications
- Detailed planned activities for 2022

2021 ACTIVITIES

On-station activities

- Population Development and Evaluation of breeding lines of *Dioscorea rotundata* cvr pona, muchumudu, afebetua, serwa among others.
 - Crossing blocks for development of improved shelf-life was also established where 200 crosses were made.
- Characterization of Promising breeding lines
- Evaluation of seedling and clonal nurseries
- Evaluation of Intermediate and Advanced breeding lines

On-farm level

- Polycross mating design was used to develop shelf-life population at Ejura, Kintampo and Atebubu.
- Evaluation of Intermediate and advanced breeding lines

Success Story of 2021 activities

Activity 1: Multi-location evaluation of 15 *Dioscorea alata* and 17 *D. rotundata* clones for tuber yield performance

Activity 2: Regional varietal trials of 13 *D. alata* clones for tuber yield performance

Objectives were to identify clones with:

- improved tuber yield (Marketable + non-marketable)
- low nematode infection scores of ≤ 3 for further evaluation and release

Locations: Fumesua, Ejura, Atebubu and Kiintampo

Activity 3: Hybridization and rapid seed multiplication using the vine technology

Results - Evaluation of 15 *D. alata* clones

Table 1: Mean tuber yield and nematode infection scores of selected *D. alata* clones evaluated across four locations in the 2020 growing season

Entry	Genotype	Tuber Yield (t/ha)			Nematode
		Marketable	Non marketable	Total	
10	TDa 1510 OP16/0248	24.82	1.56	26.38	2
7	TDa 1510 OP16/0083	19.91	4.19	24.10	2
1	TDa 1510 OP16/0042	19.42	1.99	21.42	2
2	TDa 1510 OP16/0031	13.34	7.03	20.37	2
13	CRI Afase Ahodenfo (Check1)	13.44	3.77	17.21	2
14	CRI Afase Pa (Check 2)	12.55	3.35	15.89	2
15	Matches (Check 3)	6.68	4.12	10.80	2
	Mean	15.74	3.72	19.45	2.00
	CV(%)	55.36	33.42	38.79	37.99
	SED	3.48	1.64	3.30	0.42

Results – Evaluation of 17 *D. rotundata* clones (Clonal Nursery)

Table 2: Mean tuber yield and nematode infection scores of selected *D. rotundata* clones evaluated across four locations in the 2021 growing season

Entry	Genotype	Tuber Yield (t/ha)			Nematode
		Marketable	Non marketable	Total	
7	Dente OP16/1147	3.89	1.75	5.64	2
2	TDr 1515 OP16/0059	2.04	2.67	4.71	2
13	TDr 1515 OP16/0102	4.00	0.64	4.64	2
6	TDr151 5 OP16/ 0196	3.49	0.62	4.11	2
15	Dente (Check 2)	2.01	2.00	4.01	2
16	TDr 95/19177 (Check 3)	2.69	1.25	3.94	2
17	CRI Mankrong Pona (Check1)	2.09	1.81	3.90	2
	Mean	2.89	1.53	4.42	2.00
	CV(%)	43.97	49.47	57.90	26.38
	SED	1.20	0.64	1.27	0.47

Results – Evaluation of 13 *D. alata* clones

Table 3: Mean tuber yield and nematode infection scores of selected *D. alata* clones evaluated as RVTs across four locations in the 2020 growing season

Entry	Genotype	Tuber Yield (t/ha)			Nematode
		Marketable	Non marketable	Total	
12	TDa 02/00151	16.79	2.11	18.90	3
6	TDa 00/00045	15.39	3.36	18.75	3
7	TDa 00/01176	10.19	6.04	16.24	2
2	TDa 00/00103	11.06	4.85	15.90	3
3	TDa 98/01168	11.94	3.31	15.25	2
4	TDa 02/00012	11.19	3.72	14.92	3
5	Matches (Check)	4.69	5.07	9.76	2
	Mean	11.61	4.07	15.67	2.57
	CV(%)	58.87	43.34	43.85	37.62
	SED	1.85	0.83	1.88	0.27

Results – Hybridization and vine multiplication

Table 4: Controlled and polycross seeds generated in 2021

Location	Type of cross	Parents		No. of crosses	No. of seeds	% Success
		Females	Males			
Fumesua	Controlled	3	3	4516	3253	72
Atebubu	polycross	3	3	-	1701	
Total					4954	

Table 5: Micro-tubers generated from the vine multiplication technology in 2021

Type of material	No. planted	No. harvested	% Success
<i>D. rotundata</i> released	19500	15290	78
<i>D. alata</i> released	2670	1973	74
Test lines	19500	16186	83
Landraces	8440	6962	82
Total	50110	40411	81

2022 ACTIVITIES

On-station activities

- Population Development and Evaluation of breeding lines of *Dioscorea rotundata* cvr pona, muchumudu, afebetua, serwa among others.
 - Crossing blocks for development of improved shelf-life was also established where 200 crosses were made.
- Characterization of Promising breeding lines
- Evaluation of seedling and clonal nurseries
- Evaluation of Intermediate and Advanced breeding lines

On-farm level

- Polycross mating design was used to develop shelf-life population at Ejura, Kintampo and Atebubu.
- Evaluation of advanced breeding lines (Tricot Approach)

Release of yam varieties

- Local landraces eg Dente and Muchumudu
- Promising Genotypes

STANDARDIZED RVT

Objective

- to assess the performances of selected *Dioscorea rotundata* and *D. alata* genotypes in multiple environments across Nigeria, Ghana, Benin and Cote d'Ivoire to select candidates with superior attributes as candidate varieties and/or parents.

Methodology

- 3 locations in Ghana; Ejura, Kintampo and Atebubu
- The genotypes -14 advanced test clones and 2 check varieties for each species.
- 4x4 simple lattice design in 2 replications across the allocated number of locations
- Pest and Disease Assessment
- Yield and its components
- Sensory Evaluation

Thank you for your attention