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OUA/STRC JOINT PROJECT-31

SEMI-ARID FOOD GRAIN RESEARCH AND DEVELOPMENT

S A F G R A D

633.3
WT

SEMI-ARID REGIONAL COWPEA ADAPTATION TESTING

(S A R C A T)

RESULTS AND REPORT

1980

3183

INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE

I.I.T.A.

B.P. 1783, OUAGADOUGOU, (UPPER VOLTA)

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CONTENTS

	<u>Page n°</u>
Introduction	1
Objectives	2
Distribution-Collaborators	3-5
Cowpea Breeding :	6-20
- Description	6
- Results and Discussion	7
- Appendix	8-19
- Procedure for data collection	20
Cowpea Entomology :	21-25
- Description of Standardised Sampling Procedure Trial	21
- Results and Discussion	21-22
- Description of Minimum Insecticide Trial	22
- Results and Discussion	22
- Appendix	23-25
Cowpea Agronomy	26

INTRODUCTION

This report on Semi-Arid Regional Cowpea Adaptation Testing (SARMAT), summarises the results of various regional cowpea trials conducted in different SAFGRAD member countries in the year 1980. Data received till March 1, 1981 have been included in this report.

This is the first year of organising the SAFGRAD cowpea regional trials. In 1980 these trials represented three disciplines -breeding, agronomy and entomology. As part of the cowpea breeding activity, 23 sets of Semi-Arid Regional Cowpea Variety Trial (SARCVT) were sent to 13 national programs. The agronomy program sent three different trials : Cowpea Management Trial-1 (soil fertility) to 10 locations in five countries, Cowpea Management Trial-2 (planting date) to 15 locations in six countries and Maize-Cowpea Relay Cropping Trial to 10 locations in five countries. Similarly the entomology program sent two types of trials : Cowpea Minimum Insecticide Trial to nine locations in eight countries and Sampling Procedures of Cowpea Pests Trial to nine locations in six countries.

This is the first effort for compilation of such results and it is recognised that improvements in terms of additional statistical analyses and the use of computer will follow in the future reports.

Cooperation received from collaborators in designing, conducting and coordinating these trials is greatly appreciated. This team effort of cowpea scientists in the semi-arid regions of Africa will help in rapid identification and mobilisation of superior germplasm to national cowpea research and production programs. It is hoped that this report will be useful to the network of cowpea scientists and other development agencies in effective use of superior cowpea materials.

The regional cowpea variety trials were coordinated by Dr. V. D. Aggarwal, the regional agronomy trials by Dr. F. E. Brockman and the regional entomology trials by Dr. Y. S. Rathore.

Additional information and other details on any of the SAFGRAD regional trials may be obtained by writing to the Project Leader, IITA/SAFGRAD, B.P. 1783, OUAGADOUGOU, Upper Volta.

O B J E C T I V E S

IITA/SAFGRAD program is carried out in four major areas of work :

1. Resident research at four research stations in Upper Volta.
2. Regional efforts
3. Support to national programs.
4. Training.

In the regional efforts, organisation and coordination of regional cowpea research trials is one of the important activity of the IITA/SAFGRAD team. The main objectives of the regional trials are :

1. To make elite cowpea germplasm available to research workers in the semi-arid region of tropical Africa for testing and use either directly or as a source of breeding material in their national programs.
2. To provide national scientists an opportunity to have their elite materials systematically evaluated over a wide range of environments in the semi-arid areas.
3. To develop varieties possessing tolerance to common problems in semi-arid areas for wider adaptability and stability.
4. To evaluate variation in diseases and insects important for cowpea production and to find solutions to these problems common in the semi-arid region.
5. To evaluate and develop cultural practices in overcoming some of the agronomic production constraints common in the semi-arid regions.

Various types of regional cowpea trials sent to different SAFGRAD countries in 1980 season and the names of research workers who conducted them are listed in the following page.

During the crop season, a group visit consisting of IITA/SAFGRAD cowpea team and 5 national researchers was organised to monitor the regional trials in various countries and to facilitate the exchange of ideas and observations in the field.

List of cooperators who conducted the Cowpea Regional Trials in 1980.

<u>Country</u>	<u>Cooperator</u>	<u>Discipline</u>
BENIN	Mr. Detongnon Jean s/c Directeur U.R.P. INA B.P. 3 N'Dali, Rép. du Bénin	Breeding and Agronomy
	Mr. Atach Pierre, Laboratoire de Défense de Cultures, B.P. 884, Cotonou Rép. du Bénin	Entomology
BOTSWANA	Miss Gasenome Maphanyame P/Bag 0033, Gaberone Botswana, South Africa	Breeding
	Mr. Field Thomas Agriculture Research Station P.O. Bag 0033, Gaberone, Botswana	Entomology
CAMEROON	Mr. Owen Gwatemey (ACPO) SAFGRAD Project INA Nord B.P. 33, Maroua Cameroon	Breeding, Agronomy and Entomology
GAMBIA	Mr. Albert Cox and Mr. Tom Senghore c/o Mr. M.S. Sompo Ceesay, Assistant Director (Research), Dept. of Agriculture Cape St. Mary, Banjul, Gambia	Breeding and Agronomy
	Mr. B. Trawally, Entomologist- Pathologist, Dept. of Agriculture Cap St. Mary, Gambia	Entomology
GHANA	Dr. D. Sharma Agricultural Expt. Station Nyankpala, P.O. Box 483 Tamale, Ghana	Breeding
	Mr. Dick Taylor Bolgatanga, Ghana	Agronomy
	Dr. J.F. Abu, Entomologist Dept. of crop science University of Ghana Legon, Ghana	Entomology
	Dr. G.K.A. Bushin, CRI-CSIR Box 3785, Kumasi Ghana	Entomology
GUINEE	Mr. Joseph Soumah Centre de vulgarisation Agro-Technique de Bamban-Kindia s/c Ministère de l'Agriculture, des Eaux et des FAPAs. Conakry, Rep. de Guinée	Breeding and Entomology

MALI	Mr. Aibon Tembeley s/c Directeur S.R.C.V.O. Sotuba, B.P. 438, Bamako, Mali	Breeding and Agronomy
	Mr. Brahimé Sidibé Entomologist, Défense des cultures S.R.C.V.O., Sotuba, Bamako, Mali	Entomology
MAURITANIA	Mr. O. Rachid s/c Dr. Camara Fodjé Directeur, CNRADA, B.P. 22 Kaeidi, Mauritania	Breeding
	Mr. Diallo Ousmane CNRADA, Kaeidi, Mauritania	Entomology
NIGER	Mr. Mahamadou Issaka Maga Sélectionneur de Niébé C.N.R.A. B.P. 240, Maradi, Niger	Breeding and Agronomy
NIGERIA	Dr. O. Leleji I.A.R. PMB 1044 Samaru, Zaria	Breeding
SENEGAL	Mr. Zamba Thiaw s/c Dr. Papa Assana Camara C.N.R.A. Bambey, Sénégal	Breeding and Agronomy
	Dr. Mbaye N'Doye C.N.R.A. Bambey, Sénégal	Entomology
TCHAD	Mr. Mabissoumi Dabi Station Agronomique de Déli Moundou, Tchad	Breeding
UPPER VOLTA	Dr. V.D. Aggarwal Cowpea Breeder B.P. 1495 Ouagadougou, Upper Volta	Breeding
	Dr. F.E. Brockman Cowpea Agronomist B.P. 1783 Ouagadougou, Upper Volta	Agronomy
	Dr. Y.S. Rathore Entomologist B.P. 1783, Ouagadougou, Upper Volta	Entomology



SAGRAID REGIONAL TESTING SITES IN COUNTRIES WHICH PARTICIPATED IN 1979 AND 1980 TRIALS
SITES REGIONAUX SAGRAID DANS LES PAYS AVANT PARTICIPIES AUX ESSAIS DE 1979 ET 1980

COWPEA BREEDING

C O W P E A B R E E D I N G

Description of Semi-Arid Regional Cowpea Variety Trial (SARCVT)

The main objective of this trial is to systematically evaluate the performance of promising varieties that have been developed or recommended by any national, regional or international organisation across the semi-arid belt of the African continent.

It is emphasized that these trials be conducted at the station representing semi-arid zone in various countries so as to identify superior varieties which could be directly used by any country in their national cowpea production programs. SARCVT trial in 1980 had 20 varieties (19 improved + 1 local) including erect, spreading and prostate plant types. These varieties were contributed by Senegal (4), Nigeria (3), Botswana (2), Rep. of Benin (1) and IITA/Upper Volta (9). Names and country of their origin is listed below :

<u>Name</u>	<u>Country of origin</u>
Kpodiguegue	Rep. of Benin
Blackeye	Botswana
Rhenoster	Botswana
341	IAR, Nigeria
48	IAR, Nigeria
355	IAR, Nigeria
58-57	Senegal
Mougne	Senegal
Bambey-21	Senegal
N'Diambour	Senegal
TVx 1999-01F	IITA/Upper Volta
TVx 1999-02E	"
TVx 309-1G	"
TVx 1948-01F	"
VITA-4	"
VITA-5	"
Gorom-Gorom Local	"
KN-1	"
IFE BROWN	"

RESULTS AND DISCUSSION :

Results were received from eleven locations in seven countries at the time of writing this report. Results of the individual locations are presented in Appendix 1 to 11.

YIELD :

On average of the eleven locations (Appendix 12), TVx 1948-01F produced the highest mean yield (1352 kg/ha) and was the highest yielder at Kano, Nigeria (1922 kg/ha). In the previous years' trials, it has also been one of the most widely adapted variety in the drier parts of Upper Volta. The other lines were TVx 1999-01F (1316 kg/ha), TVx 1999-02E (1278 kg/ha), Kpodiguegue (1269 kg/ha), KN-1 (1263 kg/ha) and Gorom Gorom local (1150 kg/ha).

Gorom-Gorom local was found to be exceptionally good at Farako-Ba (1450 kg/ha), Maradi (1354 kg/ha) and Sotuba (2596 kg/ha). It originated from a hot and dry area in Upper Volta and has been tested for the first time in such a wide range of environments.

Variety from Benin, Kpodiguegue, was the highest yielder at Kamboinse (1896 kg/ha), and also tested for the first time over a wide range of environments. Both these are local photoinsensitive varieties and seem to be widely adapted. These varieties will be re-evaluated next year for yield and other characteristics.

DISEASES :

Major diseases that were recorded in the SARCVT trial at various locations were : bacterial blight (Mindif, Cameroon), pod blotch (Kamboinse, Upper Volta), viruses (Ira-Guiring, Cameroon and Kamboinse), cercospora (Kamboinse) and scab (Farako-Ba, Upper Volta).

Based on multilocation data, Blackeye, amongst the varieties was highly susceptible to bacterial blight, pod blotch and scab, Bambey-21 to cercospora and bacterial blight and 355 to virus.

Cowpea Aphid-borne Mosaic Virus (CAMV) was more predominant in Cameroon whereas Cowpea Yellow Mosaic Virus (CYMV) occurred frequently in Upper Volta, Niger, Mali and Senegal.

A P P E N D I X

Appendix 1.

Pays : Haute-Volta
Country : Upper Volta

Localité : FARAKO-BA
Locality : FARAKO-BA

Expérimentation : SARCUT
Experiment : SARCUT

Année : 1980
Year : 1980

Entrée Entry	Origine Origin	Jours de floraison à 50 % Days to 50% flowering	Type de plante Plant type	Virus	Taches brunes Pod blotch	Gale Scab	Rendement en graines Seed (kg/ha)
1. Kpodgegue	Bénin	45	2	1	1	2	853
2. Black-eye	Botswana	47	2	1	1	5	369
3. Rhenoster	"	46	1	2	1	1	933
4. 341	Nigéria	48	3	1	1	2	808
5. 48	"	46	3	1	2	1	789
6. 355	"	44	2	4	1	2	606
7. 58-57	Sénégal	45	3	2	1	2	1092
8. Mougne	"	45	3	1	1	2	961
9. Bambe-21	"	42	1	1	1	1	544
10. N'Diambour	"	44	3	1	1	2	1031
11. TVx 1999-01F	IITA/U. Volta	49	3	1	1	1	1172
12. TVx 1999-02F	"	48	3	1	1	2	950
13. TVx 309-1G	"	45	2	1	1	2	1250
14. TVx 1948-01F	"	47	3	1	1	1	1072
15. VITA-4	"	47	3	1	1	1	764
16. VITA-5	"	47	3	1	1	1	1069
17. Gorom-Gorom Loc.	"	47	3	1	1	3	1450
18. KN-1	"	48	3	1	1	1	908
19. IFE BROWN	"	46	3	2	1	2	850
20. Local check Témoin Local	"	72	4	1	1	1	992
Overall mean		35	3	1	1	2	923
Moyenne générale		13	0.43	40	25	64	36
C. V.							

	Entrée Entry	Origine Origin	Jours de flo- aison à 50% Days to 50 % flowering	Type de plante Plant type	Taches brunes Pod blotch	Rendement en graines Seed (kg/ha)
1.	Kpodiguégué	Bénin	41	2	2	1896
2.	blackeye	Botswana	43	3	2	657
3.	Rhenoster	"	40	1	2	1155
4.	341	Nigéria	48	3	1	165
5.	48		40	3	1	1423
6.	355		40	1	2	965
7.	58-57	Sénégal	43	3	1	1078
8.	Mougne	"	41	3	1	1717
9.	Bambey-21	"	40	1	5	1131
10.	N'Diambour	"	40	3	2	1140
11.	TVx 1999-01F	ITTA/U. Volta	44	3	1	1555
12.	TVx 1999-02E	"	44	3	1	1352
13.	TVx 309-1G	"	41	2	2	1443
14.	TVx 1948-01F	"	44	2	1	1835
15.	VITA-4	"	42	3	2	1741
16.	VITA-5	"	43	3	3	1225
17.	Goron-Gorom Loc.	"	44	4	1	1082
18.	KN-1	"	44	3	2	1777
19.	LFE IRONN	"	42	3	2	1278
20.	Témoin local Local check		59	4	1	4
	Moyenne générale Overall mean		43	3	2	1231
	C. V.		3	12	46	42
						25

Appendix 3.

- 10 -

Pays : Haute-Volta Localité : GOROM-GOROM Expérimentation : SARCVT (1980)
 Country : Upper Volta Locality : GOROM-GOROM Experiment :

Entrée Entry	Origine Origin	Jours de floraison à 50% Days to 50 % flowering	Rendement en graines Seed (kg/ha)
1. Kpodiguegue	Bénin	44	811
2. Blackeye	Botswana	44	394
3. Rhenoster	"	44	483
4. 341	Nigéria	46	328
5. 48	"	46	694
6. 355	"	45	483
7. 58-57	Sénégal	43	656
8. Mougne	"	44	606
9. Bambey-21	"	45	644
10. N'Diambour	"	44	783
11. TVx 1999-01F	IITA/U. Volta	46	744
12. TVx 1999-02E	"	46	822
13. TVx 309-1G	"	46	233
14. TVx 1948-01F	"	47	394
15. VITA-4	"	45	283
16. VITA-5	"	46	278
17. Gorom Gorom Loc.	"	45	800
18. KN-1	"	46	533
19. IFE BROWN	"	44	706
20. Témoin local Local check		45	556
Moyenne générale Overall mean		45	562
C. V.		3	34

Appendix 4.

Pays : Niger Localité : MARADI Expérimentation : SARCVT Année : 1980
 Country : Niger Locality : MARADI Experiment : SARCVT Year : 1980

Entrée Entry	Origine Origin	Jours de floraison à 50% Days to 50 % flowering	Type de plant Plant type	Rendement en graines Seed (kg/ha)
1. Kpodiguegue	Bénin	43	2	548
2. Blackeye	Botswana	44	3	365
3. Rhenoster	"	42	1	237
4. 341	Nigéria	50	4	654
5. 48	"	43	3	588
6. 355	"	42	1	400
7. 58-57	Sénégal	45	4	1240
8. Mougne	"	43	3	521
9. Bambeay-21	"	40	1	171
10. N'Diambour	"	39	3	858
11. TVx 1999-01F	IITA/U. VOLTA	48	2	763
12. TVx 1999-02E	"	47	2	563
13. TVx 309-1G	"	43	1	404
14. TVx 1948-01F	"	47	2	548
15. VITA-4	"	46	2	454
16. VITA-5	"	47	4	783
17. Gorom Gorom loé	"	46	4	1354
18. KN-1	"	46	2	217
19. IFE BROWN	"	44	3	496
20. Témoin local Local check		48	4	821
Moyenne générale Overall mean		45	2	599
C. V.		3	18	36

Appendix 5.

Pays : Bénin Localité : INA Expérimentation : SARCVT Année : 1980
 Country : Locality : Experiment : Year :

Entrée	Origine	Jours de floraison à 50%	Rendement en graines
Entry	Origin	Days to 50 % flowering	Seed (kg/ha)
1. Kpodiguegue	Bénin	48	917
2. Blackeye	Botswana	46	542
3. Rhenoster	"	47	500
4. 341	Nigéria	47	542
5. 48	"	48	667
6. 355	"	47	375
7. 58-57	Sénégal	46	708
8. Mougne	"	46	708
9. Bambey-21	"	47	417
10. N'Diambour	"	46	833
11. TVx 1999-01F	IITA/U.Volta	54	833
12. TVx 1999-02E	"	52	792
13. TVx 309-1G	"	48	667
14. TVx 1948-01F	"	53	833
15. VITA-4	"	52	833€
16. VITA-5	"	51	500
17. Gorom Gorom Loc.	"	48	625
18. KN-1	"	49	750
19. IFE BROWN	"	49	833
20. Témoin local Local check		54	625
Moyenne générale Overall mean		49	675
C.V.		2	26

Entrée Entry	Origine Origin	Jours de floraison à 50% Days to 50 % flowering	Type de plante Plant type	Virus	Chancre bactérien Bacterial blight	Rendement en graines Seed (kg/ha)
1. Kpodiguegue	Bénin	45	3	2	3	1679
2. Blackeye	Botswana	46	3	1	2	1183
3. Rhenoster	"	41	2	3	1	967
4. 341	Nigéria	53	3	4	1	646
5. 48	"	43	2	4	1	523
6. 355	"	43	1	4	2	435
7. 58-57	Sénégal	49	3	5	1	198
8. Mougne	"	46	3	4	1	1060
9. Baibey-21	"	42	1	2	2	888
10. N'Diambour	"	42	3	4	1	456
11. TVx 1999-01F	IITA/U. Volta	51	3	1	1	2006
12. TVx 1999-02E	"	50	3	2	2	1717
13. TVx 309-1G	"	47	2	2	2	1125
14. TVx 1948-01F	"	47	3	1	2	1940
15. VITA-4	"	50	3	2	1	1575
16. VITA-5	"	48	3	2	2	1329
17. Gorom-Gorom loc.	"	50	3	5	1	483
18. KN-1	"	46	3	2	1	2692
19. IIE BROWN	"	46	3	3	1	731
20. Témoin local Local check		64	3	2	1	1177
Moyenne générale Overall mean		47	2	3	1	1140
C. V.		3	20	28	30	30

Appendix 7.

Pays : Cameroun
Country : Cameroon

Localité : MINDIF
Locality : MINDIF

Expérimentation : SARCWT
Experiment : SARCWT

Année : 1980
Year : 1980

Entrée Entry	Origine Origin	Jours de floraison à 50 % Days to 50 % flowering	Type de plante Plant type	Chancre bactérien Bacterial blight	Virus	Rendement en graines Seed (kg/ha)	
1. Kpodiguegue	Bénin	54	2	6	1	1875	
2. Blackeye	Botswana	54	3	6	1	1146	
3. Rhenoster	"	51	1	3	2	1271	
4. 341	Nigéria	59	3	3	2	1063	
5. 48	"	51	3	2	1	1583	
6. 355	"	50	2	8	2	1021	
7. 58-57	Sénégal	55	4	3	1	1979	
8. Mougne	"	54	4	2	1	1583	
9. Bambeay-21	"	48	1	8	1	625	
10. N'Diambour	"	47	4	6	1	1396	
11. TVx 1999-01F	IITA/U. Volta	59	2	2	1	1542	
12. TVx 1999-02E	"	55	3	6	1	1542	
13. TVx 309-1G	"	55	1	4	2	1250	
14. TVx 1948-01F	"	57	3	2	1	1854	
15. VITA-4	"	60	2	4	1	1229	
16. VITA-5	"	58	4	8	1	1271	
17. Gorom-Gorom Loc	"	54	4	3	1	1500	
18. KN-1	"	58	2	3	1	1479	
19. IFE BROWN	"	56	3	3	1	1583	
Moyenne générale Overall mean		54	3	4	1	1410	
C. V.		6	19	33	25	17	

Appendix 8.

- 15 -

Pays : Mali Localité : SOTUBA Expérimentation : SARCVT Année : 1980
 Country : Mali Locality : SOTUBA Experiment : SARCVT Year : 1980

Entrée Entry	Origine Origin	Jours de floraison à 50% Days to 50 % flowering	Rendement en graines Seed (kg/ha)
1. Kpodiguegue	Bénin	44	1921
2. Blackeye	Botswana	48	740
3. Rhenoster	"	45	1300
4. 341	Nigéria	48	2083
5. 48	"	43	1717
6. 355	"	45	2169
7. 58-57	Sénégal	48	2281
8. Mougne	"	46	1923
9. Bambeay-21	"	46	1221
10. N'Diambour	"	44	1392
11. TVx 1999-01F	IITA/U. Volta	52	2177
12. TVx 1999-02E	"	50	2592
13. TVx 309-1G	"	47	1996
14. TVx 1948-01F	"	50	2427
15. VITA-4	"	58	2221
16. VITA-5	"	47	2354
17. Gorom Gorom Loc.	"	47	2596
18. KN-1	"	50	2248
19. IFE BROWN	"	48	1892
20. Local check Témoin local		65	1838
Overall mean Moyenne générale		48	1954
C. V.		2	20

Appendix 9.

Pays : Mali Localité : SIKASSO Expérimentation : SARCVT Année : 1980
 Country : Mali Locality : SIKASSO Experiment : SARCVT Year : 1980

Entrée Entry	Origine Origin	Rendement en graines Seed (kg/ha)
1. Kpodigueue	Bénin	1450
2. Blackeye	Botswana	1035
3. Rhenoster	"	763
4. 341	Nigéria	1083
5. 48	"	1067
6. 355	"	1000
7. 58-57	Sénégal	1417
8. Mougne	"	1408
9. Bambey-21	"	744
10. N'Diambour	"	1633
11. TVx 1999-01F	IITA/U. Volta	1452
12. TVx 1999-02E	"	1640
13. TVx 309-1G	"	1515
14. TVx 1948-01F	"	1696
15. VITA-4	"	1704
16. VITA-5	"	1815
17. Gorom-Gorom Loc.	"	1467
18. KN-1	"	1635
19. IFE BROWN	"	1009
20. Témoin local Local check		1992
Moyenne générale Overall mean		1376
C. V.		26

Appendix 10.

Pays : NIGERIA Localité : KANO Expérimentation : SARCVT Année : 1980
 Country : NIGERIA Locality : KANO Experiment : SARCVT Year : 1980

Entrée Entry	Origine Origin	Jours de floraison à 50% Days to 50 % flowering	Type de plante Plant type	Virus	Rendement en graines Seed (kg/ha)
1. Kpodiguegue	Bénin	43	2	2	1531
2. Blackeye	Botswana	42	4	4	612
3. Rhenoster	"	41	1	4	588
4. 341	Nigéria	47	2	3	1154
5. 48	"	40	2	3	1183
6. 355	"	41	1	3	960
7. 58-57	Sénégal	43	4	4	817
8. Mougne	"	43	3	2	1499
9. Bambeay-21	"	42	1	4	988
10. N'Diambour	"	41	4	4	784
11. TVx 1999-01F	IITA/U. Volta	46	2	2	1900
12. TVx 1999-02E	"	44	2	2	1635
13. TVx 309-1G	"	43	1	3	903
14. TVx 1948-01F	"	44	2	2	1922
15. VITA-4	"	47	2	2	1622
16. VITA-5	"	44	4	2	1696
17. Gorom-Gorom-Loc.	"	43	4	3	748
18. KN-1	"	39	2	3	1387
19. IFE BROWN	"	43	2	3	1469
20. Local check Témoin local		45	2	3	1145
Moyenne Générale Overall mean		43	2	3	1227
C. V.		2	14	21	30

Appendix 11.

Pays : Gambie Localité : SAPU Expérimentation : SARCVT Année : 1980
 Country : Gambia Locality : SAPU Experiment : SARCVT Year : 1980

Entrée	Origine	Rendement en graines kg/parcelle
Entry	Origin	Seed kg per plot
1. Kpodiguegue	Bénin	480
2. Blackeye	Botswana	300
3. Rhenoster	"	320
4. 341	Nigéria	370
5. 48	"	620
6. 355	"	420
7. 58-57	Sénégal	420
8. Mougne	"	320
9. Bambey-21	"	230
10. N'Diambour	"	380
11. TVx 1999-01F	IITA/U. Volta	330
12. TVx 1999-02E	"	450
13. TVx 309-1G	"	250
14. TVx 1948-01F	"	350
15. VITA-4	"	170
16. VITA-5	"	180
17. Gorom Gorom Loc.	"	550
18. KN-1	"	270
19. IFE BROWN	"	270
Moyenne Générale Overall mean		350
C. V.		50

Yields (kg/ha^{-1}) of varieties in the Semi-Arid Regional Cowpea Variety Trial SARCVT) conducted at different locations in Africa, 1980.

Rendements (kg/ha^{-1}) des variétés dans l'Essai Variétal Régional de Niébé dans la Zone Semi-Aride (SARCVT) conduit dans différents sites en Afrique, 1980.

Variety	Origin Origine	Farako-Ba U. V.	Kamboinsé U. V.	Saouga U. V.	Karadi Niger	Ina Benin	Ira-Guiring Cameroun	Mindif Mali	Sotuba Mali	Sikasso Mali	Kano Nigeria	Sapu Gambia	Mean Moyenne
KPODIGUEQUE	Bénin	853	1896	811	548	917	1679	1875	1921	1450	1531	480	1269
BLACKEYE	Botswana	369	657	394	365	542	1183	1146	740	1035	612	300	668
RHENOSTAR	Botswana	933	1155	483	237	500	967	1271	1300	763	538	320	774
341	Nigéria	808	165	327	654	542	646	1063	2083	1083	1154	370	809
48	Nigéria	789	1422	694	588	567	523	1583	1717	1067	1183	620	987
355	Nigéria	606	965	483	400	375	435	1021	2169	1000	960	420	803
58-57	Sénégal	1092	1078	656	1240	708	198	1979	2281	1417	817	420	1081
MOUCNE	Sénégal	961	1717	606	520	708	1060	1583	1923	1403	1499	320	1119
BAMBEY-21	Sénégal	544	1131	644	171	417	888	625	1221	744	988	230	691
N'DIAMBOUR	Sénégal	1031	1140	783	858	833	456	1396	1392	1633	784	380	971
TVx 1999-01F	IITA/U.V.	1172	1555	744	763	833	2006	1542	2177	1452	1900	330	1316
TVx 1999-02E	IITA/U.V.	950	1352	822	563	792	1717	1542	2592	1640	1535	450	1273
TVx 309-1G	IITA/U.V.	1250	1443	233	404	667	1125	1250	1996	1515	903	250	1003
TVx 1948-01F	IITA/U.V.	1072	1835	394	548	833	1940	1854	2427	1695	1922	350	1352
VITA-4	IITA/U.V.	764	1741	283	454	833	1575	1229	2221	1704	1622	170	1145
VITA-5	IITA/U.V.	1069	1225	278	783	500	1329	1271	2354	1815	1696	180	1136
GOROM-GOROM LOCAL	IITA/U.V.	1450	1082	800	1354	625	483	1500	2596	1467	748	550	1150
KN-1	IITA/U.V.	908	1777	533	216	750	2692	1479	2248	1635	1387	270	1263
Ife Brown	IITA/U.V.	850	1278	706	496	833	731	1583	1892	1009	1469	270	1011
LOCAL CHECK		992	4	556	821	625	1177	—	1838	1992	1145	—	1017
TRIAL MEAN		923	1231	562	599	675	1140	1410	1954	1376	1227	350	1041
S.E. ±		335	304	191	216	175	345	234	392	351	369	180	85
C.V. %		36.3	24.7	34.0	36.1	26.1	30.3	16.6	20.1	25.5	30.1	50.3	30.0

PROCEDURE FOR DATA COLLECTION FOR SARCVT :

1. Number of plants per plot : Count the number of plants in the two centre rows of each plot after the seedlings have been thinned to one seedling per hill. This data should be obtained within 30 days after planting.
2. Days to 50 per cent first flower (DFF) : Record the number of days from planting until about half of the plants in a given plot have produced their flowers.
3. Plant type (PT) : Record the plant type on the scale of 1-4 where :
 - 1 = erect
 - 2 = semi-erect
 - 3 = spreading
 - 4 = prostate
4. Days to 50 % ripe pods (DFRP) : Record the number of days from planting until about half the plants in a given plot have given matured pods.
5. Days to final harvest (DFH) : Count the number of days from planting until the final harvest of the plot.
6. Disease and insect scores : A visual rating or estimate of diseases should be recorded when the most obvious symptoms can be observed on the leaves, stems, peduncles, petioles, pods and roots of cowpea. The method of scoring is explained in the section on "disease control". Similarly, insect ratings are estimate of insect damage. (Note : Illustrated handbooks to aid identification of the major diseases and pests are provided).
7. Total dry weight of pods : Total weight of pod harvested from the same sample area (two center rows) in a given plot. The weight should be expressed in grams. If given as a single total harvest weight, enter data under total harvest, otherwise enter weights for first, second and subsequent harvest weight in sequence.
8. Total dry weight of pods : Total weight of seed harvested from the same sample (two center rows) in a given plot. The weight should be expressed in grams. Record data in same manner as pod weights, as a single harvest, or for each harvest separately.

COWPEA ENTOMOLOGY

COWPEA ENTOMOLOGY

1. Description of the Standardised Sampling Procedures for Cowpea Pests Trial :

The objective of this experiment was to determine population levels of flower thrips (Megalurothrips sjostedti), Maruca (Maruca testulalis) and several species of pod sucking bugs (Anoplocnemis curvipes, Riptortus dentipes, Acanthomia spp. and Nezara viridula) in various cowpea growing areas of the Semi-Arid belt of Africa. The trial was sent to Cameroon, Ghana, Guinee, Mali, Mauritania and Upper Volta. At the time of writing this report, results were received from Guinee and Upper Volta.

The experiment was planted in a 10 x 10 m plot separately for each insect. There were two dates of planting at an interval of 15 days ; one little before the normal planting time and other during the normal sowing period. An improved locally adapted variety, KN-1, was planted with row to row and plant to plant spacings of 1 m and 20 cm, respectively. To measure thrip populations, samples of flower buds and flowers were taken periodically ; Maruca larvae were observed by dissecting the flowers and number of pod sucking bugs were counted visually per meter from each row of the plot.

RESULTS AND DISCUSSION :

At Kamboinse in Upper Volta, the experiment was planted on 25 th June (D_1) and 11th July (D_2). Population of thrips observed in flower buds and flowers were grouped and presented in Appendix 13. In D_1 , number of thrips were quite low in the beginning of the season bu continuously increased as the season progressed. In D_2 , thrip population was almost similar as in D_1 in the beginning but was higher 42 DAP. Subsequently, population temporarily declined but increased again. This indicated that August is a favourable month for multiplication of this insect. More detailed information is required on the population dynamics and seasonal abundance of this highly injurious insect.

Population of Maruca and pod sucking bugs were very low during this season.

The same experiment at Kankan (Guinee) was planted on July 19 th (D_1) and August 3 (D_2). Population of thrips was low in D_1 in the beginning of the season but increased at a later stage. In D_2 population was quite high right from the beginning and continued to be higher until the end (Appendix 14).

.../...

This indicated that flower thrips are also an important pest of cowpea in Guinee.

Besides thrips, infestation of Aphis carccivora, Emoasca dolichi, Maruca testulalis, Anoplocnemis curvipes, Riptortus dentipes, Acanthomia horrida, Nezara viridula and Callosobruchus maculatus was observed at different stages of crop growth in field.

2. Description of the Minimum Insecticide Trial :

The primary objective of this trial was to evaluate different lines of cowpea that possess varying level of resistance to flower thrips and to certain extent resistance to Maruca, under minimum insecticide regime. The trial was sent to Benin, Cameroon, Ghana, Guinee, Mali, Mauritania, Niger, Senegal and Upper Volta. At the time of writing this report, results are received from Senegal and Upper Volta.

The experiment was planted in a randomized block design with 9 treatments replicated 4 times. The plot size was 6 rows X 5 m with a row to row spacing 75 cm and plant to plant 20 cm. Decamethrin (Decis) was applied twice at the rate of 15 g a.i./ha per application 35 and 50 DAP. The four middle rows from each plot were reserved for yield and the two border rows were used to sample flower buds and flowers to count number of thrips and Maruca. The cowpea lines were evaluated on the basis of insect population and grain yield.

RESULTS AND DISCUSSION :

Population of flower thrips in buds and flowers is given in Appendix 15. The results indicated that higher thrips in buds were obtained from VITA-7 followed by VITA-4 and Kamboinse local. In flowers, the thrip population was significantly higher in Kamboinse local. TVx 3236-1-2 produced the maximum yield (1633 kg/ha) and Kamboinse local minimum (250 kg/ha). Other promising lines were TVx 2839-1-1 and TVx 3236-1-1.

In Bamboy, Senegal the thrip population was comparatively higher on VITA-4, VITA-5, VITA-7 and local 5857 as compared to others. Maximum grain yield (1679 kg/ha) was obtained from TVx 3236-1-2 followed by its sister line TVx 3236-1-1 (1605 kg/ha). Cultivar ER-7 also performed well (1303 kg/ha). Local variety in spite of two insecticide applications had poor yield (555 kg/ha). Low yields of VITA-4, VITA-5 and VITA-7 were due to poor plant stand (Appendix 16).

In conclusion, TVx 3226-1-2 gave the highest yield both in Senegal and Upper Volta.

A P P E N D I X

Appendix 13.

Date de semis Planting date.	Population de thrips JAS Population of thrips DAP				
	35	42	49	56	63
(D1) 25 Juin 25th June	0	1.6	5.0	56.2	79.1
(D2) 11 Juillet 11th July	6.3	24.3	14.4	76.4	-

Appendix 14.

Pays : Guinée Localité : Expérimentation : Procédures d'échantillonage
Country : Guinee Locality : KANKAN Experiment : Sampling procedure
Année : 1980
Year : 1980

Date de semis Planting date	Population de thrips JAS Population of thrips DAP			
	35	42	49	56
(D1) 19 Juillet 19th July	16	22	28	42
(D2) 13 Août 13th August	36	42	53	65

Appendix 15.

Pays : Haute-Volta
Country : Upper VoltaLocalité : KAMBOINSE
Locality : KAMBOINSEExpérimentation : Essai minimum d'insecticide
Experiment : Minimum insecticide trialAnnée : 1980
Year :

Entrée Entry	Thrips des fleurs flower thrips		Rendement en grains grain yield	
	Pour 10 boutons per 10 buds	Pour 10 fleurs per 10 flowers	kg/parcelle kg/plot	kg/ha kg/ha
VITA-4	14.0 (3.7)*	10.3 (3.7)*	1.340	893
VITA-5	3.8 (1.4)	12.7 (3.5)	1.450	967
VITA-7	14.3 (3.7)	26.0 (4.9)	1.362	908
ER-7	9.0 (2.6)	25.3 (5.0)	1.537	1025
TVu 1509	5.3 (1.9)	11.2 (3.3)	1.475	983
TVu 2839-1-1	2.3 (1.3)	23.2 (4.7)	2.087	1391
TVu 3236-1-1	7.5 (2.7)	7.0 (2.5)	2.050	1367
TVu 3236-1-2	2.5 (1.1)	11.0 (3.1)	2.450	1633
Kamboinse locale	10.7 (3.3)	67.0 (8.9)	0.375	250
L.S.D. 5 %	7.4 (1.7)	28.8 (2.1)	0.221	
L.S.D. 1 %	9.9 (2.4)	39.0 (2.8)	2.299	
C.V. %	65.4 (49.9)	81.4 (32.4)	9.630	

* Transformé à la racine carrée

Transformed to square root

Appendix 16.

Pays : Sénégal
Country : Sénégal

Localité : BAMBEY
Locality : BAMBEY

Expérimentation : Essai minimum insecticide
Experiment : Minimum insecticide trial

Année : 1980
Year : 1980

Entrée Entry	Population de thrips Population of thrips				Larves de Maruca sur les gousses Maruca larvae in flower 45 DAP	% infestation de Maruca sur les gousses Maruca infested pods		Rendement kg/ha
	Boutons Buds	Fleur Flower	Fleur Flower	Fleur Flower		52 JAS	59 JAS	
	45 JAS 45 DAP	45 JAS 45 DAP	52 JAS 52 DAP	59 JAS 59 DAP		52 DAP	59 DAP	
VITA-4	0.0	1.3	7.0	38.0	2.8	0.0	0.7	81
VITA-5	1.3	4.8	3.8	24.3	5.5	3.1	5.0	223
VITA-7	2.0	3.0	6.3	29.5	2.8	0.6	1.4	400
ER-7	1.8	6.0	1.3	10.5	3.8	6.2	1.9	1303
TVu 1509	0.8	4.3	3.3	0.3	3.0	3.2	3.5	1150
TVx 2893-1-1	0.3	5.0	8.3	1.8	4.8	4.6	2.3	1051
TVx 3236-1-1	2.0	6.0	6.0	13.8	5.8	1.5	2.2	1605
TVx 3236-1-2	1.3	6.0	2.4	14.8	2.5	1.1	1.1	1679
Local 5857	3.0	4.8	21.3	8.0	0.9	0.9	3.3	555
Moyenne - Mean	1.4	4.6	4.8	17.1	4.3	2.3	2.4	894
L.S.D. 5 %	NS	NS	NS	22.4	NS	3.8	NS	520
C.V. %	91	55	79	89	76	111	155	42

COWPEA AGRONOMY

COWPEA AGRONOMY

Note : RESULTS OF THE COWPEA AGRONOMY TRIALS WERE NOT READY AND
WILL BE CIRCULATED LATER.

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