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MAIZE RESEARCH PROGRAMME IN THE GAMBIA
A PAPER PRESENTED AT THE FOURTH OAU/STRC WORKSHOP
ON MAIZE AND COWPEAS UNDER JP 31 SAFGRAD
OUAGADOUGOU, UPPER VOLTA 1ST-2ND MARCH 1982
BY T.G. SENGHORE AND A.H.A. COX, AGRONOMISTS.

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INTRODUCTION:

The major objective of the running agronomy programme is to identify the principal yield limiting factors and to find the appropriate adoptable techniques to overcome them "yield reducers". With erratic rains and high variability of rainfall amounts within any given season as well as from season to season water (soil moisture), is the most limiting factor to crop production. The rainfall pattern, amount and distribution during any given season seriously affects results and necessitates the need to run trials across locations and over a number of years. In this way results obtained can be combined and ~~analysed~~ analysed for the "average" performance over time and spaces. It is envisaged that data obtained this way will lead greater validity to recommendations emanating therefrom.

The following factors have been identified as important constraints to increased maize production in The Gambia:

1. TIME OF PLANTING:
2. OPTIMUM PLANTING POPULATION AND PLANTING ARRANGEMENT
3. TIMELY WEEDING (AS COMPETES WITH OTHER CROPS AT WEEDING TIME)
4. AMOUNT AND KIND OF INORGANIC AND ORGANIC FERTILIZERS AND FREQUENCY OF APPLICATION.
5. MOISTURE CONSERVING CULTIVATION -LAND PREPARATION TECHNIQUES.
6. THE PLACE OF MAIZE IN THE FARMER'S CROPPING SYSTEM

At present the recommended variety is the Nigerian Composite B (NCB), a variety with yellow grains which matures in 95 days. The crop improvement agronomist is in search of higher yielding varieties with the desired agronomic characteristics for the Gambian eco-systems.

In June 1981, a Mixed Farming and Resources Management Project" was initiated within the Ministry of Agriculture. This project has a maize component and already all the facts emanating from research have been gathered and formulated in a 'technology package.' The package consists of the following

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components:

- (a) Recommended variety
- (b) Site selection
- (c) Seed bed preparation
- (d) Seeding rate and plant population
- (e) Kind and quality of fertilizer plus method and frequency of application.
- (f) Weeding and soil moisture conservation
- (g) Harvesting, drying and storage
- (h) Forage conservation.

An extension bulletin has been prepared for the use of extension agents. Research is continuing on finding improved varieties and better farming techniques aimed at increasing the yield the farmer obtains per unit area of land. During the 1981 cropping season the following were among the maize trials conducted at Sapu and Yundum:

1. MAIZE NITROGEN RESPONSE TRIAL
2. MAIZE NITROGEN BY PLANT POPULATION (PLANTING SYSTEMS) TRIAL
3. MAIZE N.P.K. TRIAL
4. MAIZE CULTIVATION TRIAL
5. SAHEL INSTITUTE MAIZE VARIETY TRIAL
6. SAFGRAD RUVT-1 TRIAL
7. GIMMYT MAIZE VARIETY TRIAL
8. QUALITY PROTEIN MAIZE TRIAL
9. FAO SIMPLE FERTILIZER

In the variety trials the recommended variety, NCB, has consistently performed well vis a vis the other introduced varieties indicating that a superior variety has yet to be discovered.

The fertilizer trials were more variable. Observations during the season showed that maintaining a high and uniform plant population throughout the growth cycle is of utmost importance to uniformity of results. The wide variation in the fertilizer trials results is typical of the kind of variation normally encountered in rainfed agriculture, thus underlining the need for multi-location trials for several years.

II. CROP IMPROVEMENT PROGRAMME - MAIZE

With the birth of the SAFGRAD Joint project - 26 and re-furisation with Joint project - 31 in this Sub region of ours, an ultimate goal was set to solve the problem of Scanty food supplied in the area. Over the years, these Scanty Supplies have also remained at the mercy of draughts, pests, diseases and other disasters.

Our own Task, as is true of other participating Researchers, has been a technical one of Running experiments and multilocation trials that will give us a clear indication of high - yielding, adaptable varieties with good nutritional qualities of maize, Cowpeas, groundnuts, Sorghum and Millet. As such trials have been carried out with the aim of solving problems pertinent to both farming systems and crop improvement.

Maize is not a principal food crop in The Gambia, yet there is the necessity to produce maize for both human and livestock as there is a long 'HUNGRY SEASON' of about seven months.

The following figures can illustrate the growing importance of maize in the Gambia.

In 1974/75, 4.4 thousand hectares were planted whereas in							
1980/ 5.9	"	"	"	"	"	"	"
In 1974/75 4.9	"	Tonnes of grain was harvested were as					
In 1980/81 6.3	"	"	"	"	"	"	"

Conditions for producing maize in the country are quite favourable when compared to other producing areas in the world and maize could help alleviate the afore-mentioned food problem in the country.

There is normally plenty of rainfall to produce fairly good maize yields during the rainy period and the low humidity during the dry season is very favourable for grain storage.

The rainfall pattern for the 1981 cropping season has been one quite desirable for the growth and production of the majority of Agricultural crops grown in the Gambia.

Trials carried out under the umbrella of the crop improvement programme were as follows:-

- (1) RUVT - 1 Trial - Location - Yundum, only one set was received.

We've done analysis on this trial and results are presented in table

Top yielders were the varieties

- (a) HVB - 1 with 5.94 T/ha
- (b) Pool -16 " 5.57 " "
- (c) TZPB " 5.41 " "

- (2) Sahel Institute Maize variety trial (YUNDUM)

Analysis on this was also done and results in table

- Top yielders proved to be
- (1) IRAT 100 with 4.78 T/ha
 - (2) BDS 111 " 4.21 "
 - (3) NCB blanc " 4.20 "
 - (4) MASSAYOMBA " 3.76 "

Both Irat 100 and Massayomba were taken from the previous years RUVT Trial because even though they appeared in the CILIS protocol, the seeds never reached us.

The same trial at Sapu performed very well too but without the Irat series and Massayomba.

Top yielders here were (1) BDS III with 4.6 T/ha.

- (2) ZM 10 " 4.4 "
- (3) JEKA " 4.1 "
- (4) NCB BLANC " 3.5 "

- (3) CIMMYT QUALITY PROTEIN MAIZE TRIAL - SAPU

It must be noted that this has been the first time we carried out CIMMYT INTERNATIONAL trials on maize.

In this trials, the best performers were

- (1) LA MAQUINA with 5100 T/ha
- (2) COTAXTLA 5002 T/ha
- (3) POZ RICA 7832 with 4649 T/ha
- (4) ACROSS 7843 with 4566 T/ha

(4) GIMMYT MAIZE VARIETY EVALUATION TRIAL w'

This trial had 17 entries with 3 checks .

Entries in both this particular trial and the previously mentioned performed very well.

Top yielders were	(1)	with	T/ha
	(2)	"	"
	(3)	"	"

(5) Sweet Corn

During the last SANGHAI Conference we obtained some sweet Corn which we tried at Sapu by multiplying the few grammes we took back from IITA. Now we have an appreciable amount to go by.

It had such a high sucrose content that palatability tests nearly whiped out the crop.

RUVT - 1981 - YUNDUM

AGRONOMICS CHARACTERISTICS.

TRT NO.	VARIETY	(CM)				(CM)			DUNCAN MULTIPLE RANCE	
		AVERAGE NUMBER OF PLANT/	AVERAGE PLANT HEIGHT	AVERAGE EAR HEIGHT	AVERAGE STEM LODGE/ PLOT	AVERAGE ROOT LODGE/ PLOT	AVERAGE NO OF EARS/ PLOT	AVERAGE WT. OF EAR HARVEST/ PLOT (kg)		AVERAGE DRY GRAIN WT/ PLOT (kg)
5.	HVB-1	103.50	209.69	80.56	3.00	33.75	89.25	7.51	5.94	a
3.	Pool 16	94.75	171.00	63.50	2.50	19	88.25	6.68	5.57	b
11.	TZPB	93.75	205.31	71.44	2.75	18	80.75	6.32	5.28	
8.	POOL 18	99.75	185.81	60.81	1.00	21.75	88.75	6.32	5.28	
2.	MEXICAN 176	96.25	183.63	73.00	1.00	19.50	83.25	5.97	5.02	
12.	LOCAL CHECK (N.C.B.)	97.00	195.13	72.13	1.75	35.25	77.25	5.66	4.98	
9.	CAHLY YELLOW	94.50	158.44	67.06	1.25	22.25	87.25	6.02	4.84	
6.	NH2	100.25	191.94	67.06	1.50	39.00	98.00	6.25	4.73	
10.	TZE 4	100.00	173.13	58.81	3.00	31.25	87.50	5.64	4.55	
1.	POOL 27	96.75	172.81	57.44	2.25	16.25	87.00	4.99	3.91	
7.	TZ UT	87.75	210.38	73.63	2.25	23.50	76.25	5.57	3.89	
4.	COMP.77 JAUNE FLINT SARIE	95.50	176.75	57.44	3.25	55.50	68.75	3.16	2.43	

CIMMYT MAIZE VARIETY EVALUATION TRIAL SAPU 1981
SUMMARY OF AGRONOMIC CHARACTERISTICS.

VARIETIES	PLANT HEIGHT	EAR HEIGHT	DAYS TO 50% SILKING	NO PLANT LODGED ROOT	NO PLANTS LODGED (STAL K)	NO EARS HARVESTED	COB WEIGHT	GRAIN WEIGHT
1. POZA RICA 7921	180	89	52	5	3	38	5432	4322
2. MARACAY 7921	176	88	51	6	6	39	4999	2937
3. CO TAXTLA 7822	178	89	53	4	5	33	6532	5002
4. AGROSS 7822	180	89	50	5	5	33	5199	3949
5. LOS DIAMANTES	180	87	52	6	6	36	5132	3936
6. AGROSS 7824	178	85	52	6	5	33	4966	3842
7. POZA RICA 7827	180	87	51	5	5	37	4966	3753
8. AGROSS 7827	181	90	49	3	4	33	4199	3233
9. FERKE (1) 7928	179	89	53	5	4	30	4332	3346
10. LA MAQUINA 7928	175	86	53	4	3	36	5499	3816
11. KISANGA 7729	178	87	50	3	5	34	4735	4162
12. CUYATA 7929	167	80	51	6	7	30	5732	3439
13. SIDS (1) 7929	185	91	52	5	5	31	5099	3956
14. POZA RICA 7832	179	88	50	5	8	36	5866	4649
15. AGROSS 7736	181	87	50	44	4	32	4899	3849
16. OBREGONN 7936	180	88	52	7	6	32	6999	3659

cont..2...

VARIETIES.	PLANT HEIGHT WEIGHT	EAR HEIGHT	DAYS TO 50% STIL- KING	NO PLANT LODGED ROOT	NO PLANTS LODGED (STAKL)	NO EARS HARVESTED	COBB WEIGHT	GRAIN WEIGHT
17. LA MAQUINA 7843	180	85	51	5	6	39	6632	5100
18. POZA RICA 7843	183	90	53	3	5	26	3466	2716
19. AGROSS 7843	184	90	51	5	7	34	5899	4566
20. AGROSS 7728 RE	189	94	50	6	5	38	5199	3766
21. AGROSS 7729 RE	176	86	49	4	5	31	4999	3252
22. NCB	186	93	50	7	5	35	5466	3896
23. JEKA	184	91	49	6	5	28	2333	1760
24. ZM 10	175	865	52	7	5	33	5465	4249

QUALITY PROTEIN MAIZE TRIAL - CIMMYT 1981.

OBJECTIVE: . To test quality protein maize in maize growing areas.

DOCUMENTATION: TRIAL REF NO. SAPU
M2B/81/01 SAPU

TREATMENT: VARIETIES.

1. Chuquisaca 7741
2. San Jeronimo (1) 7941
3. Obregon 7941
4. Temp. X Trop. QPM (RSF)
5. Tem White QPM (RSF)
6. Amar. Bajio x Maices ARG. QPM (RSF)
7. Amar. Subtropical QPM (RSF)
8. Across 7741 RE
9. Across 7845 (N) RE
10. Check 1
11. Check 2
12. Check 2.

DESIGN: Randomized block, 4 replications
75 cms between rows
50 cms between plants
3 seeds per hole, thin to 2 plants.
(22 plants per row, 88 plants plot)

PLOT SIZE. 5. cm x 3. cm (gross)
5. cm x 1.5m (nett)

FERTILIZER: 80kg/ha of N as C.A.N. (Basal dressing)
50kg/ha of P₂O₅ as single super dressing
80kg/ha of N as Urea Top dressing 3 wks after planting.
20kg/ha of K₂O as potassium nitrate 3 wks after planting.

- RECORDS:
- | | |
|--------------------------|------------------------------------|
| 1. Germination count | 10. Number of plants harvested |
| 2. Days to emergence | 11. Total number of ears |
| 3. Days to 50% flowering | 12. Moisture number of rotten ears |
| 4. Plant Height | 13. Moisture percentage |
| 5. Ear height | 14. Disease score |
| 6. Root lodge | 15. Insect score |
| 7. Stalk lodge | 16. Plant aspect |
| 8. Field weight | 17. Ear aspect |
| 9. Plant colour | 18. Husk cover |
| | 19. Hardness of endosperm. |

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9. Plant colour	18. Husk cover
	19. Hardness of endosperm.

CIMMYT QUALITY PROTEIN MAIZE TRIAL
SAPU 1981
SUMMARY OF AGRONOMIC CHARACTERISTICS

VARIETIES	PLANT HEIGHT	DAYS TO 50% SILKING	EAR HEIGHTS	NO PLANTS LODGE(ROOT)	NO. PLANTS LODGED(STALK)	NO. EARS HARVESTED	KG/HA COB WEIGHT	KG/HA GRAIN WEIGHT	DUNCAN'S MULT RANGE
6 AMAR. BAJIO X MAICES AGR QPM (RSF)	169.3	44	80.9	9	4	35	5999	4463	
3 OBREGON 7941	163.1	45	80.5	12	8	31	4799	3749	
1 CHUQUISACA	163.1	40	80.7	6	8	33	4466	3096	
10 NCB	180.8	43	87.7	6	8	31	4732	3649	
4 TEM x TROP. QPM(RSF)	176.6	44	86.7	8	6	35	4366	3449	
1 JEKA	183.7	42	90.6	6	6	30	4166	3299	
2 SAN JERONIMO (1) 7941	159.3	51	78.1	9	6	30	4199	3173	
5 TEMP. WHITE QPM (RSF)	166.2	42	81.4	9	5	28	3899	2966	
12 ZM10	188.3	42	88.8	9	5	32	4132	2886	
8 ACROSS 7741 RE	174.1	44	84.9	10	3	25	3366	2719	
ACROSS 7845 (N) RE	173.8	41	85.8	9	6	31	4135	2589	

CIMMYT QUAIITY PROTEIN TRIAL.

SAPU 1981.

VARIETY.	! PLANT HEIGHT! ! CMS	! DAY TO 50% ! SIL- KING!	! EAR HEIGHT! ! LODGE! !(ROOT)!	! NO OF PLANT! ! LODGE! !(ROOT)!	! STALKING LODGE! ! HAR- VESTED	! NO OF EARS! ! HAR- VESTED	! COB WT ! KG/HA!	! GRAIN WT ! KG/HA!	! SHELLING % !
1. CHUQUISAGA	!163.1!	40	! 80.7!	9	! 7	! 33	!4466	!3696	! 79
2. SAN JERONIMO(1) 7941	!159.3!	51	! 78.1!	9	! 6	! 30	!4099	!3173	! 77
3. OBREGON 7941	!163.1!	45	! 80.5!	12	! 8	! 31	!4799	!3779	! 78
4. TEMP. X TROP. QPM (RSF)	!176.6!	44	! 86.7!	8	! 6	! 35	!4366	!3449	! 80
5. TEMP. WHITE QPM (RSF)	!166.2!	42	! 81.4!	9	! 5	! 28	!3899	!2966	! 76
6. AMAR.BAJED X MZICES ARG.QPM(RSF)	!169.3!	44	! 80.9!	9	! 4	! 35	!5999	!4463	! 75
7. AMAR. SUBTROPICAL QPM (RSR)	!186.4!	40	! 90.7!	7	! 6	! 22	!3365	!1870	! 60
8. ACROSS 7741 Re	!174.1!	44	! 84.9!	10	! 3	! 24	!3366	!2719	! 85
9. ACROSS 7845 (N) RE	!173.8!	41	! 85.8!	9	! 6	! 31	!4135	!2589	! 65
10. NCB	!180.8!	43	! 87.7!	6	! 8	! 31	!4732	!6449	! 74
11. JEKA	!183.7!	42	! 90.6!	6	! 6	! 30	!4166	!3299	! 77
12. ZMIO	!188.3!	42	! 88.8!	9	! 5	! 32	!4132	!2886	! 71

REGIONAL COMPEA TRIAL (C.I.L.L.S.)

OBJECTIVE: To test in various ecological zones of each of CILIS members states, the best varieties obtained and already disseminated.

DOCUMENTATION:

<u>Trial Ref. No.</u>	<u>Site</u>
CP 14/81/01	Sapu
CP 14/81/02	Yundum

TREATMENTS: VARIETIES

1. KN. - 1
2. 15 - 316
3. NIBAN
4. TN 88 - 63
5. Mougue
6. 58 - 57
7. 59 - 9
8. N'DIAMBOUR

DESIGN: Randomized complete block, 6 replications

SPACING: 50 cms between rows
50 " " plants
2 seeds per hole.

PLCP SEED: 12.0m x 4.0m (Gross) 8 rows
12.0m x 2.5m (Nett) 5 rows

FERTILIZER: 75kg/ha P₂O₅as Single super phosphate.

RECORDS:

1. Date of emergence
2. " " 50% flowering
3. Colour of flower
4. " " Pod
5. " " grain
6. Number of plants harvested
7. Weight of grain

Sahel institue maize variety test

YUNDUM, 1981

SUMARY OF AGRONOMIC CHARACTERISTICS

AVERAGES

NO. OF Cobs/ Plant	HEIGHT Of Plant (cm)	HEIGHT Of ear (cm)	No. OF Plants/ plot	NO OF Cobs harvest	NO OF Lodged plants	DRY WT of ear plot(ks)	GRAIN wt.T/ha (14% ^m)	DUNEAN malt Range
IRAT 100	0.84	213.6	89.3	219	183	130	17.39	4.78 ^a b
BOS III	0.83	213.0	54.0	227	187	70	16.33	4.21
NCB Blanc	0.76	223.4	97.4	222	168	29	16.02	4.20
Massayomba	0.69	227.7	93.9	224	159	81	14.57	3.76
IRAT 192	0.84	214.3	78.3	226	172	110	13.80	3.62 ^c d
2 M 10	0.83	310.3	80.8	219	182	86	14.78	3.57
P3 Kolo	0.81	191.8	85.3	222	179	87	11.72	2.95 ^e
Tiementie	0.66	226.7	89.3	231	152	107	11.70	2.90
JEKA	0.78	206.1	86.9	219	166	81	11.02	2.84
Zanunerini	0.75	185.0	72.8	224	169	153	9.98	2.80
J F S	0.77	191.07	69.0	218	166	144	8.65	2.51 ^f
Kongoni B	0.65	175.6	67.1	219	143	153	6.93	2.06

SEMI-ARID REGIONAL CCWPEA ADAPTATION TESTING (SERCVT)

OBJECTIVE : To identify and develop varieties with wide Adaptability in National Programmes of the S.A.T.

DOCUMENTATION :

<u>Trial Ref. N.</u>	<u>Site</u>
<u>CP2^A/81/01</u>	<u>SAPU</u>
<u>CP2^A/81/02</u>	<u>YUNDUM</u>

TREATMENT : VARIETIES

1. Kpodiguegue	11. TN 88-63
2. Black eye	12. TN 13-78
3. Rhenestar	13. TVX 1949-01F
4. 341	14. TVX 1948-01F
5. 48	15. VITA-4
6. 355	16. VITA-5 (L.S.)
7. 58 - 57	17. Gorom-Gorom Local
8. Mougue	18. KN-1
9. Bambey - 21	19. TVX 3236
10.	20. Local Check

DESIGN : Randomized complete block, four replications.

SPACINT : 75 cm between rows
20 " " plants
2 Seeds per hole, thin to one

PLOT SIZE : 4.0 m x 3 cm (Gross)
4.0 m x 1.5 m (Nett)

FERTILIZER : Basal Dressing of 75 kg/ha P₂O₅ as single supers

RECORDS :

1. Number of plants (Number in 2 centre rows 30 days after planting)
2. Days to 50 % flowering
3. Plant type (errect, Semi-errect, Spreeding, Prostrate)
4. Days to 50 % Ripe pods
5. Days to final harvest
6. Diseqse score (1-5)
7. Insect score
8. 1st Harvest (pods)
9. 2nd " "
10. 3rd " "
11. 1st " (Grain yield)
12. 2nd " "
13. 3rd " "

COW PEA VARIETY TEST YUNDUM

SARCVT AGRONOMIC CHARACTERISTICS

VARIETY	ave	ave	ave	Duncan Mult Range
	No. Of PLANT/ PLOT	Wt of pode +Grain/plot	yield of Grain kg/ha	
1. TVX 1999-01f	42.00	729.40	577.75	
2. MOUGNE	58.00	764.15	500.45	a
3. GOROM GOROM	51.00	697.42	505.25	
4. TVX 3236	46.50	695.50	493.25	b
5. BAMBEY 21	74.75	610.15	431.50	c
6. Kpodigueue	66.25	524.29	378.70	d
7. IAR 48	36.25	472.25	347.28	e
8. TVX 1948-01f	28.25	522.00	343.35	
9. LOCAL CHECK	37.25	457.10	345.10	
10. IAR 58-57	58.75	612.50	337.13	
11. KN-1	51.50	463.73	321.90	
12. N'DIAMBOUR	45.50	462.75	305.25	
13. RHENOSTER	63.00	407.20	298.50	
14. IAR 355	50.75	303.00	215.50	f
15. VITA 5	34.00	275.13	202.50	
16. IAR 341	34.25	104.81	67.25	
17. BLACK EYE	9.75			
18. TN 88-63	59.00			
19. TN 13-78	44.50			
20. VITA 4	53.75			

(mm)

DAILY RAINFALL AT YUNDUM AGRICULTURAL STATION 1981 CROPPING SEASONS

DATE	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER
1	0.00	0.00	0.00	0.00	1.80	0.80
2	0.00	0.00	0.70	0.00	8.40	0.00
3	0.00	0.00	31.30	0.00	0.00	0.00
4	0.00	0.00	33.50	0.00	2.00	5.90
5	3.00	0.00	0.00	0.00	TR	0.00
6	0.00	0.00	TR	0.00	0.00	0.00
7	0.00	0.00	2.70	134.3	6.00	0.00
8	0.00	1.00	0.00	0.00	2.30	0.60
9	0.00	0.00	4.00	0.00	1.40	0.00
10	0.00	0.00	12.90	3.70	0.00	TR
11	0.00	0.00	0.00	0.00	31.20	4.50
12	2.40	0.00	0.00	0.00	46.60	0.00
13	0.00	0.00	0.00	0.00	4.30	0.00
14	0.00	0.00	0.00	0.00	TR	0.00
15	0.00	0.00	0.00	0.00	0.00	5.20
16	0.00	0.00	TR	0.00	65.00	0.00
17	0.00	0.00	TR	2.00	TR	0.00
18	0.00	0.00	0.00	24.70	6.70	0.00
19	0.00	0.00	0.00	25.90	TR	0.00
20	0.00	0.00	0.00	0.00	TR	0.00
21	0.00	0.00	0.00	15.30	0.70	0.00
22	0.00	0.00	0.00	0.00	4.50	0.00
23	0.00	0.00		0.00	0.00	0.00
24	TR	48.10	0.00	0.00	0.00	0.00
25	0.00	0.00	5.00	0.00	0.00	0.00
26	0.00	0.00	3.50	0.00	7.20	0.00
27	0.00	0.00	0.00	31.40	0.00	0.00
28	0.00	0.00	0.00	32.10	0.00	0.00
29	0.00	0.00	5.30	0.00	0.00	0.00
30	0.00	0.00	0.00	10.50	0.00	0.00
31	TR	0.00	0.00	0.80	0.00	0.00
TOTAL	5.40	49.80	101.70	270.70	187.90	17.00
RAINDAYS	2	3	10	10	14	5
TOTAL RAINFALL	: 632.5					
RAIN DAYS	: 44					

YUNDUM AGRICULTURAL STATION 13° 21 N, 15° 34 W
1981

DATE	DAILY MAXIMUM - MINIMUM - MEAN TEMPERATURES °C																	
	MAY			JUNE			JULY			AUGUST			SEPTEMBER			OCTOBER		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	84	55	73	92	41	70	86	62	74				97	82	92	98	64	83
2	91	40	67	94	47	74	96	56	76				99	70	87	93	54	79
3	86	45	69	92	47	76	95	61	80				96	68	86	98	56	79
4	95	50	72	96	40	71	99	58	83				95	66	84	98	65	83
5	95	39	73	95	39	74	100	71	85				96	63	80	96	56	83
6	95	47	75	92	47	75	91	64	79				98	69	82	98	65	84
7	75	54	67	93	51	77	91	64	82				99	77	94	98	63	84
8	83	47	70	92	51	74	96	65	83				100	69	87	94	64	82
9	83	50	69	91	53	74	95	71	84				98	68	86	97	71	89
10	85	56	72	91	54	74	99	67	84				96	66	84	98	72	86
11	92	50	74	96	39	73	98	68	84	-	67	-	98	65	90	97	72	86
12	88	56	73	89	43	71	88	67	79	94	65	83	99	79	96	98	65	83
13	96	36	72	91	52	74	95	58	76	95	63	81	99	72	88	96	66	84
14	90	49	72	96	57	76	98	68	84	98	67	83	98	66	88	99	74	89
15	87	34	65	89	56	73	96	67	81	100	77	90	99	67	85	98	67	83
16	91	34	66	91	59	76	89	67	82	99	68	89	98	65	84	98	69	85
17	87	37	65	84	57	72	96	66	83	96	67	83	100	75	92	96	50	79
18	95	49	77	88	57	72	91	67	80	95	83	88	96	61	84	96	51	79
19	97	53	79	83	55	73	79	54	70	98	65	85	98	72	86	98	58	83
20	96	56	77	87	55	76	94	64	79	100	63	86	98	65	82	98	66	85
21	87	59	76	84	63	75	98	67	85	95	74	83	98	65	83	99	63	84
22	90	57	77	88	59	75	89	67	79	99	64	87	97	66	84	97	60	82
23	91	55	75	92	63	80	94	56	72	98	68	85	98	74	88	97	56	81
24	80	53	72	94	58	76	98	88	93	98	71	85	98	81	89	93	46	75
25	87	56	73	100	49	80	100	81	93	93	73	84	96	72	85	88	39	66
26	93	57	77	88	62	78	98	66	83	96	63	84	92	61	81	94	40	69
27	94	48	75	90	56	76	100	76	89	97	72	91	96	67	84	99	50	84
28	96	46	76	85	61	73	96	65	89	99	65	85	97	74	85	99	55	82
29	93	61	76	91	63	76	99	79	91	99	78	92	95	59	82	98	48	78
30	90	58	77	89	66	76	-	-	-	100	80	93	97	58	82	95	47	76
31	93	48	76				-	-	-	98	68	86				98	62	81

SAPU AGRICULTURAL STATION 13°33'N, 14°54'W 1981

Daily Maximum -minimum- Meand Temperatures °C

DATE	MAY			JUNE			JULY			AUGUST			SEPTEMBER			OCTOBER			
	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	
1	56	31	43	68	35	47	68	38	50	94	72	83	94	66	77	96	56	71	
2	41	30	37	55	27	37	75	49	62	-	-	-	86	64	71	95	73	82	
3	46	26	35	73	35	47	87	48	65	-	-	-	75	50	39	84	51	67	
4	60	29	41	57	34	34	42	87	58	67	-	-	-	92	62	72	92	51	76
5	58	31	39	62	34	43	83	57	68	-	-	-	85	64	71	95	68	79	
6	73	35	49	66	28	42	87	55	69	-	-	-	92	69	81	88	67	74	
7	69	46	55	53	35	41	85	63	72	-	-	-	98	65	86	90	69	79	
8	71	40	50	75	30	48	91	71	81	-	-	-	90	63	72	98	67	77	
9	49	25	39	75	34	46	85	56	69	-	-	-	94	53	66	86	58	70	
10	60	30	43	68	30	44	93	70	77	-	-	-	96	77	85	88	62	74	
11	61	33	45	72	28	47	87	60	69	91	65	74	91	63	74	98	70	82	
12	60	36	45	84	37	54	82	51	63	84	67	76	91	67	77	88	61	72	
13	90	53	69	59	28	42	80	56	67	82	56	69	91	64	73	91	59	75	
14	76	39	51	74	31	46	88	76	83	89	63	71	94	71	81	94	69	77	
15	50	36	41	70	37	51	86	54	67	92	56	70	83	60	69	88	63	73	
16	57	36	49	59	38	44	78	56	65	91	78	82	87	63	73	93	55	71	
17	55	30	41	64	36	45	81	53	63	89	58	70	90	71	79	86	62	70	
18	57	36	45	68	29	44	83	49	62	88	84	86	86	62	71	88	53	67	
19	65	32	44	86	31	48	88	75	80	94	63	73	84	57	66	87	61	73	
20	75	36	51	63	41	49	92	61	77	91	71	79	72	56	64	95	53	73	
21	63	28	45	81	35	52	92	62	73	96	88	93	88	64	71	94	60	71	
22	73	29	45	73	45	61	85	61	69	92	70	81	88	65	73	90	54	69	
23	70	36	50	84	44	60	92	59	76	90	60	73	88	65	76	92	61	71	
24	66	35	45	76	43	54	88	79	85	83	64	71	78	54	65	90	66	62	
25	92	47	65	86	51	64	89	66	75	88	65	73	82	59	69	83	58	67	
26	53	24	35	73	41	52	89	59	71	89	71	77	94	65	77	84	55	67	
27	67	27	44	71	34	49	96	66	77	84	67	75	85	64	73	90	45	67	
28	50	28	35	67	34	47	91	62	75	92	65	74	85	63	73	92	45	65	
29	56	19	34	73	47	56	88	63	72	90	72	79	89	53	64	88	47	66	
30	60	27	40	72	41	53	94	62	75	91	63	73	87	41	65	92	42	62	
31	63	49	55				92	57	75	96	72	87				88	56	67	

Daily Rainfall (mm) At Sapu Agricultural Station 1981 cropping Season.

Date	May	June	July	August	Sept	Oct.
1	0.00	0.00	0.00	0.00	2.90	31.20
2	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	4.00	5.80	0.00	0.00
4	0.00	0.00	8.00	10.00	0.00	41.00
5	0.00	0.00	0.00	0.00	3.00	0.00
6	0.30	0.00	12.00	11.60	9.80	0.00
7	0.00	1.90	3.20	3.00	2.20	0.00
8	0.00	0.00	0.00	0.00	15.80	6.30
9	0.00	0.00	33.00	16.00	48.80	0.00
10	0.00	0.00	0.00	0.00	0.00	14.30
11	0.00	0.00	0.00	0.00	8.30	0.40
12	17.60	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	19.00	0.00
14	0.00	0.00	0.50	0.30	0.00	0.80
15	0.00	0.00	0.00	0.00	0.00	22.00
16	0.00	0.00	0.00	2.00	5.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	20.80	0.00	0.00
19	0.00	0.00	TR	17.30	0.00	0.00
20	0.00	0.00	3.80	0.00	0.00	0.00
21	0.00	TR	TR	7.50	38.20	0.00
22	0.00	0.00	0.00	2.10	0.00	0.00
23	0.00	0.00	4.90	TR	0.00	0.00
24	2.00	26.60	3.10	0.00	0.00	0.00
25	0.00	0.00	TR	0.00	0.00	0.00
26	0.00	0.00	23.40	0.00	13.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	24.50	0.00	0.00
29	0.00	0.00	2.50	7.30	0.00	0.00
30	0.00	0.00	1.80	6.20	0.00	0.00
31	0.00	0.00	3.30	34.40	0.00	0.00
Total	19.80	28.50	104.40	166.90	166.50	116.00
RAINDAYS	3	2	13	16	11	7
						583.1m 52 RAIN DAYS.

CULTIVATION TRIAL : MAIZE GRAIN YIELD IN kg/ha

<u>Treatment</u>	<u>Grain Yield kg/ha</u>
Hand Hoe Package	3383
Cross Cultivation	3350
Zero Tillage	2872
Tractor Ploughing	2856
Local Traditional	2848
Ridging	2436

FAO SIMPLE FERTILIZER TRIAL

MAIZE GRAIN YIELD (kg/Ha)

<u>Treatment (kg/ha)</u>			
<u>N</u>	<u>P2O5</u>	<u>K2O</u>	
0	0	0	556
0	40	40	2556
60	40	40	3297
120	40	40	3667
60	0	40	2593
60	80	40	2259
60	40	0	2667
60	40	40	3408
60	40	80	2815

1982

MAIZE RESEARCH PROGRAMME IN THE GAMBIA

OUA/CSTR-SAFGRAD

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