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REPURLIC OF SENEGAL

MINISTRY OF RURAL DEVELOE 'MENT

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DEPARTEMENT OF RESEARCH ON CROPS PRODUCTION

1. No.

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CN0101197 H220 6AI

ON COWPEA PHYTOPATHOLOGY - 1986

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I - INTRODUCTION :

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A full fledged program on cowpea pathology was initiated during 1985. Some preliminary screening in the screen house against bacterial blight and virus diseases was carried out in 1985. This screening was continued during this year also. In addition, screening against <u>Choanephora</u> pod rot was initiated under field conditions. Some work on identification of viruses was also carried out during this year. The results of these experiments are discussed in the following paragraphs.

II - SCREENING FOR RESISTANCE AGAINST MAJOR DISEASES :

2.1 - Disease nursery for Choanephora pod rot screening :

Wet pod rot of cowpea caused by Choanephora sp. was a serious disease during 1985 season. Early varie'ties viz, Bambey 21 and CB 5 had suffered very much in Diourbel and Louga regions. With a view to identifying the resistant sources against this disease, a screening trial was conducted under field conditions at Bambey. In all 263 germplasm varieties were sown on 4.8.1986 with 2 replications. Each test variety had a single row of 5 m length. The spacing between two rowswas 80 cms while within two plants it was 50 cms. Every after 5 rows there was one infector row. Four to six rows of B 21 were also planted all around the experimental field. The infector rows were planted on 23.7.1986 with an intension that they will catch the infection early and multiply the inoculum by the time the test varieties are reached the stage for Sprinkler irrigation was given to the experimental plot in the infection. initial growth period as and when needed and at pod formation stage almost everyday. The idea of frequent irrigations at pod formation stage was to create favourable climatic conditions for development of the fungus.

The first appearance of the disease was noticed on Bambey 21 on 18.9.1986. Subsequently there was considerable increase in the disease presure. However, it was not that high as it was last year. The observations were recorded for both incidence and intensity in O-4 scale, 0 being free of disease and 4 with 100 % infection. Observations on plant stand, days to maturity, grain yield arrd other diseases noticed were recorded. The summary of the results is presented in table I.

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TABLE 1 : CHONEPHORA SCREENING HIVERNAGE 86

| SRNO | VARIETY | | PLANT COUNT | GRAIN YIELD | YIELD/ PLANT | MATURITY (DAYS) | MEAN INCID. | MEAN INTENS. | OTHER DISEASES |
|---------|---------------------|---------|----------------|----------------|-----------------|--------------------|----------------|-----------------|--------------------------|
| | | | | (g) | (g) | | (0-4) | (0-4) | |
| | 66-57 | | 13 | 66.3 | 5.1 | 64 | 1.5 | 1.5 | CR |
| 2 | 66-62 | | 15 | 411.0 | 27.4 | 75 | 1.0 | 1.0 | |
| 3 | 59-9 Dl | | 17 | 703.0 | 41.4 | 75 | 1.0 | 1.0 | |
| 4 | 59-32 | | 3.5 | 679.7 | 45.3 | 75 | 1.0 | 1.0 | |
| 5 | 78-1 | | 1.9 | 892.8 | 47.0 | 64 | 1.0 | 1.0 | |
| 6 | 59-29 | | 1.9 | 994.1 | 52.3 | 64 | 1.5 | 1.5 | RH |
| 1 | 66-57 | | 1.5 | 161.6 | 10.8 | 64 | 2.5 | 1.5 | CR |
| 8 | 78-3 | | 1 . 5 | 1602.8 | 106.9 | 64 | 2.0 | 1.5 | RH |
| 9 | 78-35 | | б | 88.3 | 14.7 | 64 | 2.0 | 1.5 | |
| 10 | 78-26 | | 19 | 862.9 | 45.4 | 64 | 1.5 | 1.5 | CR |
| 11 | 67-166 | | 15 | 237.7 | 15.8 | 64 | 1.5 | 1.5 | RH |
| 12 | 58-57 | | 18 | 1078.2 | 59 *** | 64 | 1.5 | 1.5 | CR |
| 13 | 59-12 | | 18 | 927.6 | 51.5 | 64 | 1.5 | 1.5 | RH |
| 14 | 58-2 | | 14 | 427.7 | 30.6 | 75 | 1.5 | 1.5 | CR |
| 15 | AS-3 | | 14 | 596.4 | 42.6 | 64 | 1.5 | 1.0 | CR |
| 16 | 66-14 | | 21 | 47649 | 22.7 | 64 | 0.5 | 0.5 | |
| 17 | 83-122 | | 17 | 277.9 | 16.3 | 64 | 2.0 | 1.5 | |
| 18 | 78-16 | | 5 | 43.3 | 8.7 | 75 | 1.0 | 1.0 | |
| 19 | 66-62 | | 14 | 977.2 | 69.8 | 64 | 1.0 | 1.0 | |
| 20 | 60-3 | | 15 | 568.9 | 37.9 | 64 | 0.5 | 0.5 | |
| 21 | 78-44 | | 14 | 247.1 | 17.7 | 64 | 1.5 | 1.0 | |
| 22 | 38-84 | | 15 | 775.5 | 51.7 | 64 | 0.5 | 0.5 | |
| 23 | 58-185 D2 | | 16 | 275.8 | 17.2 | 64 | 1.5 | 1.0 | |
| 24 | 58-79 Dl Al | | 13 | 395.7 | 30.4 | 64 | 1.0 | 1.0 | |
| 25 | 79-i (ALAMBO) | | 17 | 203.9 | 12.0 | 64 | 1.0 | 1.0 | |
| 26 | 59-24 T | | 19 | 314.9 | 16.6 | 64 | 0.5 | 0.5 | |
| 27 | TVU 3629 IFE | (brown) | 17 | 332.5 | 19.6 | 64 | 0.5 | 0.5 | |
| 28 | 66-45 | | 18 | 687.8 | 38.2 | 64 | 1.5 | 1.0 | CR |
| 29 | 78-33 | | 14 | 528.7 | 37.8 | 64 | 1.5 | 1.5 | |
| 30 | 67-219 | | 11 | 414.1 | 37.6 | 64 | 1.0 | 1.0 | |
| 31 | 58-95 D2 B2 | | 19 | 1413.6 | 74.4 | 64 | 1.0 | 1.0 | |
| 32 | 58-185 Dl B | | 20 | 648.8 | 32.4 | 64 | 2.0 | 1.0 | |
| 33 | 58-39 | | 19 | 144.5 | 13.1 | 64 | 1.0 | 1.0 | |
| 34 | 58-74 Dl AR | | 19 | 1266.8 | 66.7 | 64 | 2.5 | 1.5 | |
| 35 | 58-79 D2 B2 | | 18 | 247.1 | 13.7 | 64 | 1.0 | 1.0 | |
| 86 | 58-75 | | 20 | 1178.6 | 58.9 | 64 | 0.5 | 0.5 | |
| 37 | 66-36 | | 20 | 1167.6 | 58.4 | 64 | 1.0 | 1.0 | |
| 8 | 59-5 | | 19 | 860.4 | 45.3 | 64 | 1.0 | 1.0 | |
| 9 | 58-78 | | 15 | 171.9 | 11.5 | 64 | 1.0 | 1.0 | |
| ł 0 | 66-37 | | 17 | 231.8 | 13.6 | 64 | 2.5 | 1.5 | |
| 1 | 63-1 | | 15 | 354.3 | 23.6 | 75 | 1.5 | 1.0 | CR |
| 2 | 78-31 | | 18 | 550.8 | 30.6 | 75 | 1.0 | 1.0 | и |
| 3 | 78-10 | | ⊥8 1 2 | 51U.U | 20.3 25.2 | 64 | 1.U | 1.0 | (D) |
| 4 E | 10-23 50 15 | | ⊥ 3 1 17 | 407.5 002 1 | 20.2 | 04 64 | 1 5 | 1.U | CK |
| .D 6 | 50-15 70 01 | | 15 | ששט.⊥ קקג 1 | 20.4 27 1 | 04 64 | 1 0 | 1.0 | |
| 0 | 10-24 | | 1.0 | JJ0.4 | J1.L | 04 | ⊥.∪ | 1.0 | |

| 47 | 78-46 | 18 | 1394.9 | 77.5 | 64 | 1.0 | 1.0 | |
|----------|-----------------------------|-------------|----------------|--------------|----------|-----|------|------|
| 48 | 66-17 | 17 | 406.0 | 23.9 | 75 | 1.0 | 1.0 | CR |
| 49 | 59-208 | 18 | 799 .o | 44.4 | 64 | 1.0 | 1.0 | |
| 50 | 58-44 | 21 | 543.5 | 25.9 | 75 | 10 | 1.0 | |
| 51 | 66-65 | 16 | 366.2 | 22.9 | 75 | 1.5 | 1.0' | |
| 52 | 78-12 | 20 | 660.9 | 33.0 | 75 | 0.5 | 0.5 | |
| 53 | TVU 1977 (OD) | 18 | 372.8 | 20.7 | 75 | 0.5 | 0.5 | |
| 54 | 82-3 (WORTMORE) | 8 | 21.5 | 7.2 | ** | 1.0 | 1.0 | |
| 55 | 82-5 (MBACKE SENEGAL) | 11 | 115.0 | 38.3 | * * | 1.0 | 1.0 | |
| 56 | 68-226 | 14 | 435.4 | 31.1 | 64 | 1.0 | 1.0 | |
| 5'7 | 83-4 (341-2-EVS81) | 12 | 80.8 | 20.2 | 75 | 1.0 | 1.0 | |
| 58 | TVU 662 | 12 | 890.8 | 74.2 | 75 | 1.0 | 1.0 | |
| 59 | 58-152 | 13 | 310.3 | 31.0 | 75 | 1.0 | 1.0 | |
| 60 | 78-25 | 16 | 877.8 | 54.9 | 75 | 1.0 | 1.0 | |
| 61 | 58-191 | 20 | 616.3 | 30.8 | 75 | 1.0 | 1.0 | |
| 62 | BAMBEY 28 | 7 | 4.1 | 4.1 | 64 | 1.5 | 1.0 | |
| 63 | 58-107 | 21 | 630.9 | 30.0 | 64 | 1.0 | 1.0 | |
| 64 | 66-64 | 10 | 280.7 | 28.1 | 64 | 2.0 | 2.0 | BB |
| 65 | 58-30 | 20 | 873 6 | 43 7 | 64 | 1 0 | 1 0 | 66 |
| 66 | 58_185 T | 16 | 1389 0 | 45.7 86.8 | 75 | 1.0 | 1 0 | |
| 60 | 50-105 1 | 20 | 1104 2 | 55 2 | 61 | 1.0 | 1.0 | |
| 0 / | 60-I | 2.0 1.72 | 207 6 | 76 0 | 64 | 1.0 | 1.0 | |
| 60 | 00-52 | 13 | 307.0 262 E | 20.2 | 64 | 1.0 | 1.0 | חת |
| 69 70 | A9-1-12-12 | 15 | 203.5 | 20.3 E0.4 | 64 | 1.5 | 1.5 | ВВ |
| 70 | 78-42 | L 5 | /05.4 | 52.4 | 04 64 | 1.5 | 1.5 | |
| /1 | 58-32 | 20 | 12004.9 | 02.0 | 64 | 1.5 | 1.0 | |
| 72 | 78-6 | L (| 318.4 | 18.7 | 64 C4 | 1.5 | 1.0 | |
| 73 | 58-74 DI CI | ∠_1 17 | 230.1 016 7 | 23.0 E2 0 | 64 64 | 1.5 | 1.0 | DII |
| 74 | 167 | 17 | 910.7 100 7 | 53.9 11 7 | 04 75 | 2.0 | 1.0 | RH |
| 75 | 78-11 | 20 | 705.8 | 11.7 35 3 | 64 | 1.0 | 1.0 | |
| 77 | 78-32 | 17 | 201.3 | 11.8 | 64 | 1.0 | 1.0 | |
| 78 | svs-3 | 2 1 | 362.5 | 17.3 | 64 | 1.0 | 1.0 | |
| 79 | BAMBEY 26 | 11 | 248.3 | 22.6 | 64 | 1.0 | 1.0 | RH |
| 80 | 36-64 | 16 | 1159.4 | 72.5 | 64 | 1.0 | 1.0 | CR |
| 81 | POP 736 | 1.6 | 353.9 | 22.1 | 64 | 1.5 | 1.5 | CR |
| 82 | 78-39 | 13 | 230.4 | 17.7 | 75 | 1.0 | 1.0 | |
| 83 | 78-20 | 1.6 | 1041.0 | 65.1 | 75 | 1.5 | 1.0 | |
| 84 | 60-8 | 2 1 | 552.1 | 26.3 | 75 | 1.0 | 05 | |
| ٥. ۲ | 58-58 | 15 | 490 8 | 32 7 | 75 | 1 0 | 1 0 | |
| 86 | 66-59 | 3. 2 | 310.0 | 25.8 | 75 | 1.0 | 1.0 | |
| 87 | 58-151 | 15 | 722.3 | 48.2 | 75 | 1.0 | 1.0 | RH |
| 88 | 67-159 | 3.5 | 759.4 | 50.6 | 75 | 1.0 | 1.0 | |
| 89 | 78-40 | 18 | 269.4 | 15.0 | 75 | 1.0 | 1.0 | |
| 90 | 78-40 | 3.9 | 327.2 | 17.2 | 75 | 1.5 | 1.5 | |
| 01 | 63_1 A | 1 8 | 479 4 | 53 3 | 75 | 1 0 | 1 0 | ਸ਼ਿਸ |
| 91 | | 2 1 | 1485 5 | 70 7 | 75 | 1.0 | 1 0 | IXII |
| 92 | 58-95 D3 | 2 I O 0 | 770 1 | 16 0 | 75 | 1.0 | 1.0 | (TD |
| 93 | | 4 1 | 100.1 | 10.0 | 75 | 1.0 | 1.0 | CR |
| 94. | 1VU 62-07 | T T | 190.8 | 1/.3 | /5 | 1.5 | 1.0 | |
| 95 | TVU 15-02-1G | 3.9 | 1480.1 | 11.9 | 75 | 1.0 | 1.0 | |
| 96 | BAMBEY 27 | 9 | 210.1 | 23.3 | 75 | 1.5 | 1.0 | |
| 97 | TVX 199-01-F (R83) | 1.8 | 939.5 | 52.2 | 75 | 1.5 | 1.0 | RH |
| 98 | 58-40 | 11 | 600.5 | 54.6 | 75 | 1.0 | 1.0 | |
| 99 | 58-56 | 2 | 96.9 | 96.9 | 75 | 1.0 | 1.0 | |
| 100 | 59-13 | 21 | 1406.0 | 67.0 | 75 | 1.5 | 1.0 | |
| 101 | 66-48 | 1.0 | 425.7 | 42.6 | 75 | 1.0 | 1.0 | |
| | | | | | | | | |

| 1.5 | 1.5 |
|-----|-----|
| 1.0 | 1.0 |
| 1.0 | 1.0 |
| 1.5 | 1.0 |
| 1.5 | 1.0 |
| 1.0 | 1.0 |
| 1.5 | 1.0 |
| 1.5 | 1.0 |

| 102 | 66-76 | 15 | 545. 5 | 36.4 | 75 | 1.5 | 1.5 | |
|-------------|------------------|-------------|-------------------|--------------|----------|------|-------------|---|
| 103 | 66-5 | DAT | TA NOT AVAI | LABLE | | | | |
| 104 | 66-73 | 9 | 459.0 | 51.0 | 75 | 1.0 | 1.0 | |
| 105 | 58-20 | 18 | 985.7 | 54. 8 | 75 | 1.0 | 1.0 | |
| 1.06 | 58-152 | 18 | 469 .0 | 26. 1 | 75 | 1.5 | 1.0 | |
| 107 | 58-12 | 18 | 405. 0 | 45.0 | 75 | 1.5 | 1.0 | |
| 108 | 66-56 | 3 | 130. 4 | 43. 5 | 66 | 1.0 | 1.0 | |
| 109 | 66-27 | 17 | 683. 9 | 40. 2 | 66 | 1.5 | 1.0 | |
| 110 | 59-30 | 19 | 981. 8 | 51.7 | 66 | 1.5 | 1.0 | |
| 11 1 | 58-51 | 21 | 892.3 | 42.5 | 66 | 1.0 | 1.0 | |
| 112 | 58-52 | 12 | 544. 2 | 45.4 | 66 | 1.0 | 1.0 | |
| 1 1.3 | 66-77 | 15 | 193. 1 | 12.9 | 66 | 1.0 | 1.0 | |
| 1 14 | 60-6 | 1 2 | 617.7 | 51.5 | 66 | 1.0 | 1.0 | |
| 115 | 66-29 | 20 | 872.4 | 43.6 | 66 | 1.0 | 1.0 | |
| 116 | 58-55 | 21 | 517.7 | 24. 7 | 66 | 1.5 | 1.0 | |
| 117 | 66-50 | 15 | 699. 2 | 46.6 | 66 | 1.5 | 1.0 | |
| 118 | 58-64 | 3 | 30. 0 | 10. 0 | 66 | 1.0 | 1.0 | |
| 119 | 66-12 | 13 | 905. 5 | 69. 7 | 66 | 1.0 | 1.0 | |
| 120 | 66-39 | 1 2 | 202.4 | 16.9 | 66 | 1.0 | 1. | 0 |
| 121 | 58-81 | 20 | 347.0 | 34. 7 | 66 | 1.5 | 1.5 | |
| 122 | 66-75 | 2 | 0. 2 | 0. 1 | 66 | 1.0 | 1.0 | |
| 123 | 66-22 | 15 | 668.4 | 44.6 | 66 | 1.0 | 1.0 | |
| 124 | 66-47 | 16 | -1088.2 | 43. 0 | 66 | 1.0 | 1.0 | |
| 125 | 66-58 | 1.0 | 33 6. i | 33.6 | 66 | 1.0 | 1.0 | |
| 126 | 60-2 | 1.8 | 839.4 | 46.6 | 66 | 1.0 | 1.0 | |
| 127 | 66-63 | 3. 1 | 349.8 | 31.8 | 66 | 1.0 | 1.0 | |
| 128 | 60-9 | 3. 2 | 516.0 | 43.0 | 66 | 1.0 | 1.0 | |
| 129 | 58-161 | 3.8 | 1183.6 | 65.8 | 66 | 1.0 | 1.0 | |
| 130 | 66-70 | 4 | 53.1 | 13.3 | 66 | 1.5 | 1.0 | |
| 131 | /8-3/ | 7 | 73. 2 | 10. 5 | 66 | 2.0 | 1.5 | |
| 132 | 78-2 | 20 | 1540. 3 | 77.0 | 66 | 1.5 | 1.0 | |
| 133 | BAMBEY | 32 8 | 60.4 | 7.6 | 66 | 1.0 | 1.0 | |
| 134 | 66-13 | 19 | 97. 3 | 5.1 | 66 | 1.0 | 1.0 | |
| 135 | 58-19 | 19 | 495. 5 | 26. 1 | 66 | 1.0 | 1.0 | |
| 136 | 58-221 | 11 | 389.8 | 35.4 | 66 | 1.0 | 1.0 | |
| 137 | 78-8 | 19 | 1214. 2 | 63. 9 | 66 | 1.0 | 1.0 | |
| 138 | 1 86 | 12 | 700. 1 | 58. 3 | 66 | 1.5 | 1.0 | |
| 139 | 78-27 | 21 | 976. 7 | 46.5 | 66 | 1.0 | 1.0 | |
| 140 | 78 - 36 | 11 | 162.1 | 14.7 | 66 | 1.0 | 1.0 | |
| 141 | 82-10 | 22 | 289.1 | 13.1 | 66 | 1. 5 | 1.0 | |
| 142 | 66-49 | 11 | 236.0 | 21.5 | 66 00 | 1.0 | 1.0 | |
| 143 | BAMBEY 2 | 24 12 | 109.6 | 9.1 | 66 | 1.5 | 1.5 | |
| 144 | 66-21 70-00 | 19 | 1657.4 | 87.2 | 66 66 | 1.0 | 1.0 | |
| 145 | 78-39 50-95 | 10 91 | 1 98. 0 1002 1 | 19.9 47.8 | 00 66 | 1.0 | 1.0 | |
| 140 147 | 55- 25 58- 60 | 41 16 | 1036.6 | | 66 | 0.5 | ••• 0. 5 | |
| 148 | 78-38 | 12 | 212. 8 | 17.7 | 66 | 1.5 | 1.0 | |
| 149 | TVI 4557 | 1~ 1R | 145.9 | 29.2 | 66 | 1.0 | 1.0 | |
| 150 | 66-38 | 13 | 538.7 | 41.4 | 66 | 1.0 | 1.0 | |
| 151 | 66-69 | 11 | 457.3 | 41.6 | 66 | 1.0 | 1.0 | |
| 152 | 82-7 | 10 | 232.4 | 23. 2 | 66 | 1.5 | 1.5 | |
| 153 | 78-22 | 19 | 497.3 | 26. 2 | 66 | 1.0 | 1.0 | |
| 154 | 78-17 | 21 | 730.6 | 34.8 | 66 | 1.5 | 1.0 | |

CR

| 155 | 59-79 D3 | 14 | 9.5 | 0.7 | 66 | 0.5 | 0.5 | | |
|------------|------------------------|----------|-----------------|--------------|----------|-----|-----|------|-----|
| 156 | 58-43 | 18 | 706.4 | 39.2 | 66 | 1.0 | 1.0 | | |
| 15'7 | 68-240 | 22 | 464.1 | 21.1 | 66 | 1.0 | 1.0 | | |
| 158 | BAMBEY 25 | 12 | 282.9 | 23.6 | 66 | 1.5 | 1.0 | CR B | В |
| 159 | 66-68 | 14 | 599.4 | 42.8 | 66 | 2.0 | 1.0 | _ | |
| 160 | 78-19 | 14 | 455.3 | 32.5 | 66 | 1.5 | 1.0 | BI | В |
| 161 | 82-10 | 11 | 458.2 | 41.7 | 66 | 1.5 | 1.0 | | |
| 162 | 66-54 | 17 | 331.8 | 19.5 | 66 | 2.0 | 1.5 | | |
| 163 | 58-109 | 19 | 372.6 | 19.6 | 66 | 1.0 | 1 0 | | |
| 164 | 58-41 | 12 | 30 5 | 4 4 | 75 | 0.5 | 0.5 | | 170 |
| 165 | 63 5 | 16 | 20.5 | 12 0 | 75 | 1 0 | 1.0 | | ٧ſ |
| 166 | 79.20 | 10 | 222.5 | 13.J | 15 | 1.0 | 1.0 | | |
| 167 | 70-29 | 10 | 253.0 1955 9 | 25.4 | 0/ | 0.5 | 0.5 | | |
| 107 | /8-30 DAMDEN 21 | 19 | 1255.3 | 66.1 | 67 | 1.0 | 1.0 | | |
| 100 | BAMBET 31 | 12 | 117.0 | 9.8 | 67 | 1.5 | 1.0 | | |
| 159 | 78-43 | 17 | 327.3 | 19.3 | 67 | 1.5 | 1.5 | | |
| 1/U | 58-80 | 19 | 1062.4 | 55.9 | 67 | 1.5 | 1.5 | | |
| 170 | 00-53 | 10 | 815.0 | 62.7 | 67 | 1.5 | 1.5 | | |
| 172" | /8-29 DAMDEN 22 | 12 | 559.6 | 46.6 | 67 | 1.0 | 1.0 | | |
| 1/3″ | BAMBEI 22 | 4 | 147.3 | 30.8 | 67 | 1.5 | 1.0 | BI | 3 |
| 1/4 | 78-5 | 13 | 918.0 | 70.6 | 67 | 0.5 | 0.5 | | |
| 175 | 66-33 | 19 | 1293.2 | 68.I | 75 | 1.0 | 1.0 | | |
| 176 177 | 66-74 50 70 DI | 10 | 247.0 | 24.7 | 67 | 1.5 | 1.0 | | |
| 1// 170 | 58-79 DI | 11 | 1/3.0 | 15.8 | / 5 | 1.5 | 1.0 | | |
| 170 | 6/-95 70 01 | 20 10 | 290) 81.2 | 14.9 | /5 75 | 1.0 | 1.0 | | |
| 180 | /8-21 60 6 * | 16 | 1096 9 | 4.5 | 67 | 1.0 | 1.0 | | |
| 100 | 70 16 | 10 | 16 0 | 16 0 | 67 | 1.5 | 1.5 | | |
| 182 | 78-10 | ⊥ 17 | 1319 8 | 10.0 77 6 | 67 | 1.0 | 1.0 | | |
| 183 | 63-6 | 8 | 460 5 | 57 6 | 67 | 1.0 | 1.0 | | |
| 184 | DAN HAOUSSA (DH81-01) | 5 | 247.7 | 49.5 | 67 | 1.0 | 1.0 | | VR |
| 185 | 58-155 | 8 | 317.1 | 39.6 | 67 | 1.5 | 1.5 | RH | VIC |
| 186 | 66-72 | 10 | 180.8 | 18.1 | 67 | 0.5 | 0.5 | | |
| 187 | 67-32 | 15 | 195.7 | 13.0 | 67 | 1 0 | 1 0 | | |
| 188 | 66-64 | 14 | 349.4 | 25.0 | 67 | 2 0 | 1 0 | | |
| 189 | 78-7 | 17 | 1012 2 | 59.5 | 67 | 1 0 | 1 0 | | |
| 100 | | 10 | 245 0 | 12 7 | 67 | 1.0 | 1.0 | | |
| 101 | 56-165 DI A | 10 | 245.8 | 13.7 | 07 | 1.0 | 1.0 | | |
| 191 | | 10 | 485.2 | 60.7 | 6/ | 1.0 | 1.0 | | |
| 192 | 58-47 | 15 | 706.4 | 47.1 | 67 | 1.5 | 1.0 | | |
| 193 | 58-74 Dl-02 | 18 | 1364.9 | 75.8 | 67 | 1.5 | 1.0 | | |
| 194 | 78-15 | 11 | 607.0 | 55.2 | 67 | 1.0 | 1.0 | CR | |
| 195 | 66-149 | 14 | 412.3 | 29.5 | 67 | 0.5 | 0.5 | | |
| 196 | 59-26 | 16 | 504.1 | 31.5 | 67 | 1.0 | 1.0 | | |
| 197 | 58-79 D2 A2 | 8 | 171.3 | 21.4 | 67 | 1.0 | 1.0 | | |
| 198 | 66-55 | 9 | 210.9 | 23.4 | 67 | 1.5 | 1.0 | | |
| 199 | 58-95 D2 | 10 | 331.5 | 33.2 | 67 | 1.0 | 1.0 | | |
| 200 | 78-9 | 20 | 1'234.2 | 61.7 | 67 | 1.0 | 1.0 | | |
| 201 | 58-25 | 21 | 1014.9 | 48.3 | 67 | 1.5 | 1.0 | | |
| 202 | 78-11 | 18 | 1109.1 | 61.6 | 67 | 1.5 | 1.0 | | |
| 203 | 59-21 | 20 | 52.2 | 2.6 | 75 | 1.0 | 1.0 | | |
| 204 | 58-95 T | 17 | 454.1 | 26.7 | 75 | 1.0 | 1.0 | | |
| 205 | AS 7 | 12 | 691.6 | 57.6 | 75 | 1.5 | 1.0 | RH | |
| 206 | 82-9 (TVU 4552) | 14 | 373.0 | 26.6 | 75 | 1.0 | 1.0 | CR | |
| 207 | 66-37 | 3 | 377.1 | 125.7 | 75 | 1.5 | 1.5 | - | |
| 208 | 58-153 | 8 | 436.9 | 54.6 | 75 | 1.5 | 1.5 | RE! | VR |

| 209 | AS 5 | 7 | 331.6 | 47.4 | 75 | 1.0 | 1.0 | |
|--------------------|----------------|------------|----------------|--------------|------------|-----|-----|-----------|
| 210 | 67-167 | 18 | 597.9 | 33.2 | 75 | 2.0 | 1.0 | BB |
| 211 | 67-30 | 20 | 863.0 | 43.2 | 75 | 1.5 | 1.0 | RH |
| 23.2 | 2-13 | б | 132.7 | 22.1 | 75 | 1.5 | 1.5 | BB |
| 2 3.3 | 58-79 D2 B1 | 8 | 493.1 | 61.6 | 75 | 1.0 | 1.0 | |
| 23.4 | 66-74 | 9 | 220.4 | 24.5 | ·/5 | 1.5 | 1.0 | CR |
| 215 | 03-0 78-42 | 14 | 373.⊥ 332.8 | 20.7 23.8 | / 5 7 5 | 1.0 | 1.0 | |
| 2 3.0 | 82-6 V-73-1318 | 14 | 895 5 | 23.0 64 0 | 75 | 1.0 | 1.0 | |
| 218 | AS 6 | 6 | 171.9 | 28.7 | 75 | 1 0 | 1 0 | |
| 2 3 9 | 58-79 Т | 2.1 | 888.4 | 42.3 | 75 | 1.5 | 1.0 | |
| 2 3.5 | 66-54 | 10 | 183 8 | 18 4 | 75 | 1 5 | 15 | |
| 220 | 66-89 | 22 | 1302 9 | 59 2 | 75 | 1 5 | 1.0 | |
| 221 00 0 | 80 8 | 4 | 15 6 | 5 2 | 75 | 1.0 | 1.0 | |
| 222 227 | 59 - 20 A | 16 | 937 9 | 58 G | 75 | 1 5 | 1 5 | |
| 220 | | 14 | 1546 0 | 110 4 | 75 | 1.5 | 1.5 | |
| 224 | AS Z | 10 | 1540.0 | 110.1 | 75 | 1.0 | 1.0 | |
| 225 | 66-40 | 13 | 618.7 | 4/.0 | 75 | 1.0 | 1.0 | |
| 226 | 66-46 | 10 | 254.6 | 25.5 | 75 | 1.0 | 1.0 | |
| 227 | POP 736 | 16 | 166.4 | 10.4 | 75 | 1.0 | 1.0 | |
| 228 | 58-16 Dl | 13 | 728.6 | 56.0 | 75 | 1.0 | 1.0 | |
| 229 | 58-181 | 13 | 513.2 | 39.5 | 75 | 1.5 | 1.0 | |
| 230 | 58-34 | 19 | 947.6 | 49.9 | 75 | 1.0 | 0.5 | |
| 231 | 58-146 | 18 | 1321.5 | 73.4 | 75 | 1.5 | 1.0 | |
| 232 | 58-28 | 21 | 635.8 | 30.3 | 75 | 1.5 | 1.0 | |
| 233 | 82-2 | 13 | 527.9 | 40.6 | 75 | 1.0 | 1 0 | |
| 234 | 78-45 | 9 | 543.2 | 60.4 | 75 | 1 0 | 1 0 | |
| 227 | 58-74 T | 14 | 225 6 | 16 1 | 75 | 1 0 | 1 0 | |
| 235 | | 15 | 664 1 | 11 3 | 75 | 1 5 | 1 0 | |
| 230 | 50-55 | 10 | 1260.0 | тт.J 76 0 | | 1.5 | 1.0 | |
| 237 | 58-24 | 18 | 1368.2 | 70.0 | /5 | 1.0 | 1.0 | |
| 238 | BAMBEY 33 | 12 | 2/4./ | 22.9 | /5 | 2.0 | 1.5 | |
| 239 | 58-16 T | 16 | 935.1 | 58.4 15 1 | /5 | 1.0 | 1.0 | DII |
| 240 | AS 4 | 9 | 136.0 | 15.1 | / 5 | 1.0 | 1.0 | RH |
| 241 | 58-74 DI A2 | 14 | 823.9 | 58.9 | /5 | 1.5 | 1.0 | |
| 242 | 66-149 | 9 10 | 185.U 775 1 | 20.6 | 75 | 1.5 | 1.0 | CD |
| 24.3 | 58-50 | 18 | 775.1 281 9 | 43.⊥ 1/ 1 | 75 | 1.0 | 1.0 | CR |
| 24.4 | 58-5 | 21 | 558.0 | 26.6 | 75 | 1.5 | 1.0 | CR |
| 246 | 58-154 | 15 | 1000.8 | 66.7 | 75 | 2.0 | 1.5 | |
| 247 | 58-17 | 16 | 616.4 | 38.5 | 75 | 1.0 | 1.0 | CR RH |
| 248 | POP 735 | 2 L 1 4 | /41./ | 35.5 | /5 75 | 2.5 | 1.5 | GD |
| 249 | AS 8 | 14 | 0.0 | | / 5 7 E | 1.5 | 1.0 | CR |
| 250 | 58-162 | 10 | 913.U 221 6 | 55.7 12 Q | 75 | 1.0 | 1.0 | |
| 251 | 66-71 60-27 | T0 | 231.0 15 2 | 15 2 | 75 | 2.0 | 1.0 | |
| 252 | 58-37 | כ 1 ק | 15.3 F21 0 | 10.5 21 2 | 75 | 1.0 | 1 0 | |
| 253 | 59-24 DI | 17 | 531.9 | 31.3 | / 5 | 1.5 | 1.0 | |
| 254 | 83-124 | 15 | 39.8 | 2.1 | 75 | 1.0 | 1.0 | |
| 255 | 58-42 | 19 | 412.3 | 21.7 | 75 | 1.0 | 1.0 | |
| 256 | as 9 | 11 | 157.0 | 14.3 | 75 | 1.0 | 1.0 | |
| 257 | 78-18 | 15 | 472.1 | 31.5 | 75 | 1.0 | 1.0 | |
| 258 | 66-61 | 13 | 348.6 | 26.8 | 75 | 1.0 | 1.0 | |
| 259 | MOUGNE | 17 | 675.2 | 39.7 | 75 | 1.0 | 1.0 | |
| 260 | TVX 3236 | 15 | 882.0 | 58.8 | 75 | 1.0 | 1.0 | |
| 261 | CB 5 | 11 | 167.7 | 15.2 | 75 | 2.0 | 1.5 | BB |
| 262 | BAMBEY 21 | 7 | 98.6 | 14.1 | 75 | 1.5 | 1.0 | BB |
| 263 | NDIAMBOUR | 7 | 213.5 | 30.5 | 75 | 1.0 | 1.0 | |
| 100 | | | | | | | | |

VR

NOTES

- CR : CERCOSPORIOSE
- RH : RHIZOCTONIOSE
- BB : BACTERIAL BLIGHT
- VR : VIRUS
- ** : DATA NOT AVAILABLE

The observations in table I show that there is no variety which is completely free of <u>Choanephora</u>. However, the following fourteen varieties showed a very low incidence as well as intensity of the disease. More over, no other disease was seen on these varieties. However, the results need to be confirmed.

Varieties showing low (0.5 grade) incidence as well as intensity of Choanephora pod rot :

| | | | | 6 | | |
|-----|-------|----|------|----------|-----|-------|
| 1. | 66-14 | | -12. | | 3. | 38-84 |
| 4. | 59-24 | Т | 5. | TVU 3629 | б. | 58-75 |
| 7. | 78-12 | | 8. | TVU 1977 | 9. | 58-60 |
| 10. | 59-79 | D3 | 11. | 58-41 | 12. | 78-29 |
| 13. | 78-5 | | 14. | 66-72 | | |

2.2 - Screening for virus resistance

Virus is one of the major diseases of cowpea in Senegal. It is observed in all the regions and most of the local varieties have been observed to be highly susceptible. Crossing program has been taken up to incorporate virus resistance in the local cultivars. Some exotic varieties which have been reported virus resistant were crossed with some selected cultivars. An experiment was conducted at Djibelor in collaboration with the Cowpea Breeder for screening some progenies of selected crosses against virus under field conditions. Other details of the experiment were as follows :

MATERIAL TESTED :

| CROSS | GEN | N° OF ENTRIES |
|-------------------------|------|---------------|
| 1. 58-57 X IT 81 D-1137 | - F6 | 81 |
| 2. B 21 X TVX 3236-01G | F6 | 33 |
| 3. CASA 16 X B 21 | F2 | |
| 4. VLP CASA 16 X B 21 | F2 | |

| 5. | 59- 9 | X B 21 | F 2 |
|-----|--------------|------------------------------|-----|
| 6. | MOUGNE | X TVU 1185 | F 2 |
| 7. | CASA 16 | X C B 5 | F 2 |
| 8. | CASA 16 | ² X (B 21 X 1137) | F 2 |
| 9. | CASA 3 | X B 21 | F 2 |
| 10. | 58-57 | X TVU 11.85 | F 2 |
| 11. | MOUGNE (| MOUGNE x 1032) | F 2 |

EXPERIMENTAL DESIGN :

FOR CROSS 58-57 X IT 81 D-1137 F6

Randomised Block Design with 2 replications Spacing : within rows...... <u>50</u> cm between plants..... 50 cm

Row length : 5 m

FOR CROSS B 21 X TVX 3236-01G F6

| Randomise | d | Block | Design | with | 2 | r | eplicat | cions |
|-----------|---|---------|--------|------|---|----|---------|-------|
| Spacing | : | within | rows | | | 50 | CM | |
| | | between | plants | | 2 | 5 | CM | |

Row length : 5 m

FOR F2 FAMILIES

200-500 plants of each F2 family depending upon the avaibility of seed together with the parents in a non replicated trial.

Spacing : 80 X 80 cms.

METHODOLOGY :

One line of a local susceptible variety (Infector Row) was planted after every two test entries for multiplying the inoculum. The infector rows were sown on 16.07.86. The test entries were sown on 31.07.86 and 01.08.86. By this time the virus had started appearing on the infector rows. The test entries were inoculated on 12 th and13th Aug. with the sap from the infected plants. Only one replication was inoculated in case of advanced generation progenies. The uninoculated replication was used to evalute the vector transmission. The inoculum was prepared by grinding the infected leaves and diluting the expressed sap with water. Corborundum powder was added to the inoculum to act as an abrasive. The inoculation was done by rubbing the fully grown well expanded primary leaves with a forefinger wetted with the inoculum.

The virus symptoms on the test entries had started appearing by the end of August. First observation on the disease incidence on the test entries was recorded on 05.09.86. By this time about 50 % plants of infector rows were altacked by virus. The second observation was recorded on 30.09.86 when almost all the plants in the infector rows were showing virus symptoms. The severity of virus on the infector rows was so high that practically no flowers and pods were poroduced. The observations for uninoculated replication were recorded at the time of second observation only. Observations on appearance of other diseases (cognizible infection) were also recorded. All the observations are given in table 2.

-*· -¥ ·

TABLE 2 : VIRUS SCREENING

1st observation on 05.09.86

2nd observation on 30.09.86

| | | ! N° of | ' plants ! | DISEA | ASE INCIDENC | E I | 1 |
|--------|-----------------|----------|--------------|--------------|--------------|----------|--|
| i ļ | ENTRY : , | obse | erved ! | lst observa | tion,2nd obs | ervation | ! Other Diseases ! Noticed (If any) |
| 1 | ! | RI | RII, | (RI on] | ly) ¦ ri | , RII ! | ! |
| ! | | CROSS | 58-57 X I | T 81 D-1137 | F6 | | ! |
| I | ! | | ! | | ! | | |
| | ! IS 86-269 N ! | 20 | 22 ! | 0.00 | ! 0.00 | ! 4.54 ! | |
| ! | IS 86-261 N ! | 21 | 22 ! | 0.00 | ! 0.00 | ! 0.00 ! | · · · · |
| ! | IS 86-266 N ! | 22 | 22 | | ! 0.00 ! | 0.00 ! | ! |
| ! | IS 86-264 N ! | 22 | 22 ! | 4.54 | 9.09 | 4.54 ! | ! |
| ! | IS 86-268 N ! | 22 | 22 ! | 0.00 | ! 0.00 ! | 0.00 ! | . ! |
| ! | IS 86-267 N ! | 22 | 22 ! | 0.00 | 0.00 ! | 0.00 ! | . 1 |
| ! | IS 86-263 N ! | 21 | 22. | 0.00 | ! 0.00 ! | 0.00 ! | - 1 |
| ! | IS 86-265 N ! | 22 | 21 ! | 0.00 | ! 0.00 ! | 19.05 ! | ! |
| ! | IS 86-262 N ! | 22 | 22 ! | 0.00 | 4.54 | 9.09 | . ! |
| ! | IS 86-283 N ! | 22 | 22 ! | 0.00 | 0.00 | 0.00 | |
| ! | IS 86-282 N ! | 22 | 21 ! | 0.00 | 0.00 | 0.00 | . 1 |
| ! | IS 86-286 N ! | 22 | 21 ! | 4.54 | 18.18 | 4.76 | ! |
| ! | IS 86-287 N ! | 22 | 22 ! | 0.00 | 0.00 | 4.54 | ! |
| 4 | IS 86-279 N ! | 22 | | 4.54 | | 0.00 | |
| : | IS 86-284 N I | 22 | 22: | 0 00 | 4.54 | 0.00 | |
| • | IS 86-281 N ! | 2.2 | 22 ! | 4.54 | 4 54 | 0 00 ! | 1 |
| | IS 86-285 N I | 2.2 | 22 ! | 0.00 | ! 0 00 | | • |
| ! | IS 86-294 N ! | 22 | 22 ! | 0.00 | ! 0.00 | 0.00 | • |
| ! | IS 86-292 N ! | 22 | 22 ! | 4.54 | 4.54 | 4.54 | i |
| | IS 86-288 N ! | 22 | 22 ! | 0.00 | ! 9.09 | 0.00 | • |
| ! | IS 86-290 N ! | 22 | 22 ! | 0.00 | 4.54 | 0.00 ! | Web blight |
| ! | IS 86-295 N ! | 22 | 22 ! | 4.54 | 4.54 | 0.00 | 0 |
| ! | IS 86-289 N ! | 22 | 22 ! | 4.54 | 9.09 | 0.00 ! | |
| ! | IS 86-291 N ! | 22 | 22 ! | 0.00 | 0.00 | 0.00 | ! |
| ! | IS 86-293 N ! | 22 | 22 ! | 0.00 | 0.00 | 9.09 | ! |
| ! | IS 86-296 N ! | 22 | 22 ! | 0.00 | 0.00 | 0.00 | 1 |
| ! | IS 86-305 N ! | 22 | 22 ! | 0.00 | !13.64 | 0.00 ! | ! |
| ! | IS 86-300 N ! | 22 | 22 ! | 0.00 | 0.00 | 0.00 | ! |
| ! | TS 86-303 N ! | 22 | 22 ! | 4.54 | 4.54 | 0.00 ! | Web blight ! |
| ! | IS 86-301 N ! | 21 | 22 ! | 0.00 | 9.52 | 0.00 ! | ! |
| | IS 86-302 N I | 22 | · 22 · | 0 00 | | 0 00 1 | |
| • ! | TS 86-298 N 1 | 22 | 22 ! | 0.00 | 0.00 | 0.00 ! | : |
| • | IS 86-297 N ! | 2.2 | 22 1 | - 4 54 | 9 0 9 | 0.00 | |
| • | IS 86-299 M I | 22 | . <u> </u> | 0 00 | 4 54 | 9 0 9 | |
| • | TS 86-304 N I | 22 21 | 22 : | 0.00 0 50 | 9 50 | 0 00 1 | 1 |
| : 1 | TG 86_210 II ! | 21 22 | 22 i 22 i | 2.5Z 4.54 | 2.5Z | | : |
| • | | 20 | 22 i 22 i | 1.34 | 5 00 | 0.00 | |
| ÷ | TS 86-307 N ! | 2.0 | 22 1 | 0.00 | 5.00 | 0.00 | : |

| ! | ! | 1 | | ! | ! | 1 |
|---------------------------------------|---------|-----------|----------------|--------|-------------|--------------------|
| ! IS 86-308 N ! | 21 | 22 | 4.76 | 4.76 | 0.00 | 1 1 |
| ! IS 86-309 N ! | 22 | 22 | 0.00 | 0.00 | 0.00 | 1 |
| ! IS 86-311 N ! | 22 | 22 | 0.00 | 0.00 | 0.00 | 1 |
| ! 58-57 | 21 | 22 | 4.76 | 4.76 | 0.00 | ! |
| 1 1137 | 22 | 22 | 0.00 | 9.09 | 0.00 | 1 |
| ! IS 86-312 N ! | 22 | 22 | 9.09 | 9.09 | 4.54 | !!! |
| ! IS 86-251 N ! | 22 | 22 | 4.54 | 9.09 | 0.00 | !!! |
| ! IS 86-243 N ! | 22 | 22 | 0.00 | 4.54 | 9.09 | !!! |
| ! IS 86-245 N ! | 22 | 22 | 0.00 | 13.64 | 0.00 | ! Web blight ! |
| ! IS 86-249 N ! | 22 | 22 | 0.00 | 0.00 | 0.00 | !!! |
| ! IS 86-246 N | 22 | 22 | 0.00 | 0.00 | 0.00 | ! ! |
| ! IS 86-244 N ! | 22 | 22 | 0.00 | 4.54 | 4.54 | ! ! |
| ! IS 86-247 N | 22 | 22 | 4.54 | 4.54 | 0.00 | !!! |
| ! IS 86-250 N ! | 21 | 22 | 0.00 | 4.76 | 9.09 | ! ! |
| ! IS 86-248 N ! | 22 | 22 | 4.54 | 4.54 | 4.54 | ! |
| ! 15 80-242 N ! | 22 | 22 | 4.54 | 4.54 | 0.00 | ! |
| ! IS 86-237 N : | 22 | 22 | 9.09 | 9.09 | 0.00 | |
| ! 15 86-236 N ! | 21 | . 22 | 4.76 | 4.76 | 0.00 | • |
| ! IS 86-239 N ! | 22 | 22 | 4.54 | 4.54 ! | 0.00 | ! |
| ••••!•IS 86-235 N ! | 21 | 22 | 4.76 | 4.76 ! | 0.00 | ! |
| ! IS 86-240 N ! | 22 | 22 | 0.00 | 0.00 ! | 0.00 | ! ! |
| ! IS 86-234 N ! | 22 | 22 | 0.00 | 0.00 ! | 0.00 | ! |
| ! IS 86-241 N ! | 22 | 22 | 0.00 | 0.00 ! | 0.00 | ! |
| ! IS 86-238 N ! | 22 | 22 | 0.00 | 0.00 ! | 4.54 | ! |
| ! IS 86-257 N ! | 22 | 22 | 0.00 | 0.00 ! | 4.54 | ! |
| ! IS 86-260 N ! | 22 | 22 | 4.54 | 4.54 ! | 4.54 | ! |
| ! IS 86-259 N ! | 22 | 22 | 0.00 | 4.54 ! | 0.00 | ! |
| ! IS 86-256 N ! | 21 | 22 | 0.00 | 0.00 ! | 0.00 | 1 |
| ! IS 86-254 N ! | 21 | 22 | 0.00 | 9.52 ! | 4.54 | ! |
| ! IS 86-253 N ! | 22 | 22 | 0.00 | 0.00 ! | 0.00 | ! |
| ! IS 86-255 N ! | 20 | 22 | 5.00 | 5.00 ! | 0.00 | ! |
| ! IS 86-252 N ! | 22 | 22 | 0.00 | 0.00 ! | 0.00 | ! Web blight |
| ! IS 86-258 N ! | 22 | 22 | 0.00 | 9.09 ! | 0.00 | ! |
| ! IS 86-276 N ! | 22 | 22 | 0.00 | 0.00 ! | 13.64 | ! |
| ! IS 86-274 N ! | 22 | 22 | 0.00 | 4.54 ! | 0.00 | i |
| ! IS 86-275 N ! | 22 | 22 | 0.00 | 9.09 ! | 0.00 | ! Web blight |
| ! IS 86-271 N ! | 22 | 22 | 0.00 | 9.09 ! | 0.00 | ! ! |
| ! IS 86-278 N ! | 22 | 22 | 0.00 | 0.00 ! | 0.00 | ! ! |
| ! IS 86-272 N ! | 22 | 22 | 0.00 | 0.00 | 0.00 | !Choanep. pod rot! |
| ! IS 86-273 N ! | 22 | 22 | 4.54 | 9.09 | 4.54 | |
| ! IS 86-277 N ! | 22 | 22 | 0.00 | 0.00 | 4.54 | |
| ! IS 86-270 N ! | 22 | 22 | 9.09 | 9.09 | 0.00 | |
| · · · · · · · · · · · · · · · · · · · | | | 1 | 1 | | · |
| 1 | CROSS I | 3 21 X TV | 7X 3236-01G F6 | | | ! |
| · · · · · · · · · · · · · · · · · · · | | . ' | | 1 | | |
| IS 86-90 N | 40 | 40 | 0.00 | 0.00 | 0.00 | · · · · · |
| | 20 | 10 | 0.00 | 0 00 | 0 00 | · · · · |
| 13 00-72 N | צנ | 40 | 0.00 | | 0.00 | |
| 15 80-89 N | 5/ | 40 | | 0.00 | 0.00 | |
| IS 86-60. N | 40 | , , 40 ! | | 0.00 | 0.00 | · · |
| ! IS 86-63 N | 40 | 40 | 0.00 | 0.00 | 0.00 | |
| IS 86-82 N | 40 | 40 | 0.00 | 0.00 | 0.00 | Choanep. pod rot! |
| IS 86-73 N | 40 | 40 | 0.00 | 0.00 | 0.00 | ! Web blight ! |
| IS 86-71 N | 40 | 40 | 0.00 | 0.00 | 0.00 | ! |
| IS 86-80 N | 40 | 40 | 0.00 | 0.00 | 0.00 | ! |

- 11 - 1

| | | | | | | | ! | | | ! | |
|--------|-------|-----|--------|-----------|--------|----------|-----|--------|---------|----------------|-------|
| ! IS | 86-81 | Ν | 40 | 40 | 1 | 0.00 | | 0.00 | 0.00 | 1 | 1 |
| ! IS | 86-75 | Ν | ! 40 | 40 | 1 | 0.00 | | 0.00 | ! 0.00 | ! | |
| ! IS | 86-76 | Ν | 20 | 40 | | 0.00 | | 0.00 | 0.00 | ! | ş |
| ! | B 21 | | 28 | 40 | | 0.00 | | 0.00 | 0.00 | !Cercosporiose | ! |
| ! IS | 86-61 | N | 38 | 40 | | 0.00 | 1 | 0.00 | 0.00 | ! | |
| ! TS | 86-70 | N | 39 | 40 | ļ. | 0.00 | i i | 0 00 | 0 00 | 1 | t |
| I IS | 86-66 | N | 40 | 40 | I | 0.00 | į | 0 00 | 0 00 | 1 | 1 |
| 1 TS | 86-65 | N | 40 | 40 | i. | 0.00 | į | 0.00 | | Ngh hlight | 1 |
| ! IS | 86-62 | N | 40 | 40 | i | 0.00 | į | 0.00 | 0.00 | Web blight | : |
| ! IS | 86-83 | N | 40 | 40 | | 0.00 | ! | 0.00 | 0.00 | ! Web blight | • |
| ! IS | 86-69 | N | 40 | 40 | | 0.00 | ! | 0.00 | 0 00 | | • |
| ! IS | 86-86 | Ν | ! 40 | 40 | ļ | 0.00 | ! | 0.00 | 0.00 | | 1 |
| ! IS | 86-74 | N ! | 40 | 16 | 1 | 0.00 | | 0.00 | 0.00 | | |
| ! IS | 86-88 | N ! | 40 | 40 | 1 | 0.00 | ! | 0.00 | 0.00 | ! Web blight | |
| ! IS | 86-85 | Ν | 40 | 40 | | 0.00 | ! | 0.00 | 0.00 | - | |
| ! IS | 86-84 | N : | ! 40 | 40 | 1 | 0.00 | | 0.00 | 0.00 | | 1 |
| ! IS | 86-64 | N ! | 40 | 40 | 1 | 0.00 | ! | 0.00 | 0.00 | | |
| ! IS | 86-68 | Ν | 40 | 40 | 1 | 0.00 | ! | 0.00 | 0.00 | | |
| ! IS | 86-67 | N ! | 40 | 40 | 1 :- | 0.00 | | 0.00 | 0.00 | | |
| ! IS | 86-77 | Ν | 40 | 40 | | 0.00 | | 0.00 | 0.00 | | |
| ! IS | 86-78 | Ν | 40 | 40 | | 0.00 | | 0.00 | 0.00 | | |
| ! TVX | 3236 | | 40 | 40 | | 0.00 | | 0.00 | 0.00 | | |
| ! IS | 86-87 | N | 40 | 40 | | 0.00 | - | 0.00 | 0.00 | | |
| ! 1S | 86-79 | Ν | . 22 | ! 40" | · - ¥ | 0.00 | 1 | 0.00 | 0.00 | | |
| , | | | | • | • | | , | | | | -' |
| : ! | | | | | F2 | FAMILIES | | | | | |
| | | | | | | | | N° | of ' | NO of plants | |
| ! | SR N° | ! | | F | AMILY | | 1 | suscep | tible ! | gelected | ΄. |
| | | | | | | | ! | plan | ts | Sciccica | _! |
| | | | | | _ | | | | - | | |
| 1 | 1 | | CASA 1 | .6 X B 2 | 1 | | 1 | 2 | 9 | 19 | |
| | 2 | | AT5 C | ASA 16 X | B 21 | | | 5 | 1 ! | 14 | |
| 1 | 3 | | MOUGNE | X TVU | 1185 | | ! | 1 | 2 | 7 | |
| I | 4 | | CASA 1 | 6 X CB | 5 | · | | 15 | 7 1 | 20 | ļ |
| ļ | 5 | | MOUGN | Ex (mou | GNE X | 1032) | ! | 2 | 0 | 17 | ! |
| ! | б | | 59-9 | X B 21 | | | ! | | 0 | 12 , | 1 |
| ļ | 7 | | CASA 3 | 8 X B 21 | | | 1 | | 6 | 33 | ! |
| ļ | 8 | | CASA | 16 X (B : | 21 X 1 | .137) | - | 6 | 1 | 12 | ļ |
| ļ | 9 | ! | 58-57 | X TVU 1 | 185 | | ! | | 5 | 6 | |
| | | | | | | | | | | | ! |
| | | | ͲΟͲϪΤ | | | | | 24 | 1 | 140 | ! |
| t i | | , | TOTAT | | | | ľ | 71 | - ! | TIO | - [|

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The results indicated that the entries of cross 58-57 X IT 81 D-1137 were segregating for virus reaction. Some of the entries were free while others showed various degree of virus infection. Entries from the second cross <u>viz</u>, B 21 X TVX 3236-01G were observed to be free from virus infection. Some of the entries in the uninoculated replication of cross 58-57 X IT 81 D-1137 showed virus infection. Similarly there was increase in the virus incidence on infector rows at a later stage. This indicates that the vector transmission was very effective. Cowpea leaf beet)es (<u>Ootheca mutabilis</u>) which is reported to be vector for transmission of some of the viruses were observed in the test field.

All the F2 families showed segregation for virus infection except one viz., 59-9 X B 21. One hundred and forty plants free of virus infection and with desirable agronomic characters were selected for further testing.

To confirm the results obtained in the field at Djibelor the progenies of advance generation material were retested in the screen house together with some local and exotic varieties. The sowing was done on 17.11.1986 by planting 4-5 seeds of each entry in a separate pot. The inoculation was done twice, first on 29.11.86 and the second on 2.12.86. The inoculum was prepared by blending the infected leaves brought from the field trial at Djibélor in a buffer solution of sodium and potassium phosphates. Carborundum powder was dusted on the leaves before inoculation to act as an abrasive. The inoculation was done by rubbing the primary leaves with a forefinger wetted withtheinoculum.

The plant growth of the test entries was not normal probably because of low temperature during the test period. The disease development was also very slow. The observations for virus reaction were recorded on 29.12.86 and 29.1.87. The results are presented in table 3.

TABLE 3 : SCREENHOUSE REACTIONS :

1st observation on 29.12.86

2nd observation on 29.01.87

| 1 | ͲͶͲϽͺϒ | REA | CTION | l | REACTION | | | | |
|--------|------------------------|----------|------------|-----------------|----------|----------|--|--|--|
| ! | LNIKI | lst obs. | , 2nd obs. | ! ENTRY I | 1st obs. | 2nd obs. | | | |
| | | CROSS 5 | 58-57 X IT | 81 D-1137 F7 | | | | | |
| ! ! | TS 86-269 N ! | S | s s | TS 86-261 N 4 | R | 5 | | | |
| 1 | IS 86-266 N ! | :NA | NA NA | I IS 86-264 N ! | R I | R I | | | |
| 1 | IS 86-268 N ! | R | S | IS 86-267 N ! | s I | s I | | | |
| ! | IS 86-263 N ! | NA | ! NA | ! IS 86-265 N ! | S I | s I | | | |
| ! | IS 86-262 N ! | R | S | IS 86-283 N ! | S | s i | | | |
| ! | IS 86-282 N ! | R | R | IS 86-286 N ! | NA | NA | | | |
| | IS 86-287 N ! | S | S. | IS 86-279 N ! | NA ! | NA ! | | | |
| ļ | IS 86-280 N ! | NA | NA | ! TS 86-284 N ! | S I | S | | | |
| ! | IS 86-281 N ! | NA | NA NA | IS 86-285 N ! | R | S I | | | |
| ! | IS 86-294 N ! | R | R | IS 86-292 N ! | R | R I | | | |
| ! | IS 86-288 N ! | S | با | IS 86-290 N ! | NA | NA | | | |
| ! | IS 86-295 N ! | S | - S | IS 86-289 N ! | NA | NA ! | | | |
| ţ | IS 86-291 N ! | R | S | IS 86-293 N ! | NA | NA | | | |
| | IS 86-296 N ! | R | S | IS 86-305 N ! | R | R ! | | | |
| | IS 86-300 N ! | S | S | ! IS 86-303 N ! | R | R | | | |
| | IS 86-301 N ! | NA | NA | IS 86-302 N ! | S ! | S ! | | | |
| | IS 86-298 N ! | S | S | IS 86-297 N ! | S | S ! | | | |
| | IS 86-299 N ! | R | R | ! IS 86-304 N ! | R | S ! | | | |
| | IS 86-310 N ! | S | S S | ! IS 86-306 N ! | R I | R ! | | | |
| , | IS 86-307 N ! | S R | S I R | T2 86-311 N I | R I | R I | | | |
| | 13 00-309 M : 58-57 | S | s I | 1137 I | S | 2 | | | |
| | TS 86-312 N ! | S | S | ! IS 86-251 N ! | S | S | | | |
| | TS 86-243 N I | R | S ! | TS 86-245 N ! | NA | NA | | | |
| | TS 86-249 N ! | S | S I | IS 86-246 N ! | S | S ! | | | |
| | TS 86-244 N ! | R | S | IS 86-247 N ! | S | S | | | |
| | IS 86-250 N ! | S | S | IS 86-248 N ! | S | S | | | |
| | IS 86-242 N ! | S | S | IS 86-237 N ! | R | S | | | |
| | IS 86-236 N ! | S | S I | IS 86-239 N ! | S | S | | | |
| ļ | IS 86-235 N ! | R | R | IS 86-240 N ! | R | R | | | |
| | IS 86-234 N ! | NA | NA | IS 86-241 N ! | S | S I | | | |
| | IS 86-238 N, ! | R | ! S ! | IS 86-257 N ! | S ! | S | | | |
| ! | IS 86-260 N ! | N.A | NA | IS 86-259 N ! | R | S | | | |
| ! | IS 86-256 N ! | :R | R | IS 86-254 N ! | NA | NA | | | |
| | IS 86-253 N ! | R | R | IS 86-255 N ! | NA ! | NA | | | |
| | IS 86-252 N ! | S | S | IS 86-258 N ! | S ! | S | | | |
| ! | IS 86-276 N ! | S | ! S | IS 86-274 N ! | NA | NA | | | |
| | IS 86-275 N | R | S | IS 86-271 N ! | S | S | | | |
| | IS 86-278 N ! | S | S | IS 86-272 N ! | NA | NA | | | |
| ! | IS 86-272 N ! | S | S | IS 86-277 N ! | S | S ! | | | |
| 1 | IS 86-270 N ! | S | NA | | ļ | ! | | | |

(

| | | | CROSS | 5 В 2 | 21 X TVX | 323 | 6-01 | <u>G F7</u> | | | | 1 |
|---|------------------|----|--------|-------|----------|------|------|-------------|---|-------|----------------|----|
| ļ | | -! | | 1 | | ! | | | | | | |
| | IS 86-90 N | ! | R | ! | R | ! | IS | 86-72 N | ! | R ! | R | ! |
| ļ | IS 86-89 N | - | R | ! | R | ! | IS | 86-60 N | ! | s* ! | s * | ! |
| ļ | IS 86-63 N | | NA | ! | NA | ! | IS | 86-82 N | ! | R ! | R | ! |
| ļ | IS 86-73 N | | R | ! | R | ! | IS | 86-71 | Ν | ! NA | ! NA | 1 |
| ļ | IS 86-80 N | ! | R | ! | S | ! | IS | 86-81 | Ν | ! NA | ! NA | 1 |
| | ! IS 86-75 N | T | NA | ! | NA | ! | IS | 86-76 N | ! | R | R | ! |
| ļ | BAMBEY 21 | | R | ! | R | ! | IS | 86-61 N | 1 | s ! | S | ! |
| ! | IS 86-70 N | ! | R | ! | R | ! | IS | 86-66 N | ! | R ! | R | ! |
| ! | IS 86-65 N | ł | NA | 1 | NA | | IS | 86-62 N | ! | R ! | R | 1 |
| i | IS 86-83 N | | R | ! | S | | IS | 86-69 N | ! | R ! | R | Ì |
| ļ | IS 86-86 N | ! | R | ! | R | ! | IS | 86-74 N | ! | R ! | R | • |
| ļ | IS 86-88 N | | R | ! | R | ! | IS | 86-85 N | ! | R ! | R | 1 |
| ! | IS 86-84 N | | R | ! | R | ! | IS | 86-64 N | ! | R ! | R | 1 |
| 1 | TS 86-68 N | | s | 1 | S | 1 | TS | 86-67 N | ļ | R ! | R | - |
| j | TS 86-77 N | ł | NA | ! | ŇĂ | ŗ | TS | 86-78 N | ! | R I | R | |
| 1 | TVX 2226 | I | R | · · | R | | TS | 86-87 N | | R I | R | F |
| ì | TS 86-79 N | | R | • | s n | | 10 | 00 07 1 | • | IC . | IC | • |
| 1 | 10 00 / J N | 1 | 10 | • | D | • | | | | | | |
| 1 | | | | • | | | | | 1 | | 191 | ' |
| 1 | | | | | VAR | IETI | ES | | | | | : |
| 1 | | | | ! | Ϋ́ | | | | | | | _! |
| ! | B21 | | R | ! | R | ! | TVX | 3236 | | R ! | R | ! |
| ļ | ĊB 5 | | R | ! | R | ! | TVU | 1185 | - | R ! | R | ! |
| ļ | 59-9 | I | R | ! | R | ! | CAS | A 3 | I | R | S | ! |
| ļ | CASA 16 | I | S | ! | S | ! | VLP | CASA 16 | ! | R! | R | ! |
| ì | 58-111 | 1 | q | 1 | S | ! | ΝDΤ | AMBOUR | ! | R I | R | |
| 1 | 202 דדד געזיד | | с q | | ч д | | | | | | 10 | |
| 1 | TAO 222 | i | 17 | • | 17 | • | | | 1 | · · · | | 1 |
| | | | | | | | | | | | | |

NOTES :

R: Resistant

S : Susceptible

NA : Reaction not available

* : Reaction not clear

From the first cross (58-57 X IT 81 D-1137), 14 progenies showed resistant reaction while 47 were susceptible. Two progenies did not show clear reaction. Ten entries which are found resistant in the screenhousetest had shown susceptible reaction in the field test. Only four progenies viz., IS 86-282 N, IS 86-299 N, IS SS-240 N and IS 86-253 N have shown resistant reaction in both the tests. Five progenies from the second cross (B 21 X TVX 3236-01G) were found susceptible in the screenhouse test while all the entries were observed to be resistant in the field test. Amongst the varieties B 21 and TVX 3236 confirmed their resistance in the screen house test. TVU 393 and 1185 which are reported to be resistant also confirmed their resistance in the screen house. Local varieties Casa 3, Casa 16 and 58-111 were observed to be susceptible. However, the resistant reaction of other local varieties viz., 59-9 and Ndiambour was contradictory to their susceptible reaction in the field trials.

2.3 - Bacterial blight resistance screening :

Bacterial blight is another important disease of cowpea in Senegal. Some varietal screening was carried out during 1985 and few resistant' sources were identified. These resistant sources were used in the crossing program for incorporating bacterial blight resistance in the local susceptible varieties. Sixty seven entries comprising of 2 crosses viz., 58-57 X B 21 (18) and B21 X TVX 3236 (39) together with 10 varieties consisting of parents and local varieties were screened for bacterial blight resistance under screen house conditions. Four to five seeds of each entry were sown in each pot separately on 15.11.1985. The inoculation was carried out on 29.11.1985 by the stem stab method described in 1985 report. The observations for the bacterial blight score were recorded on 9.01.86 and 29.01.86 in 1 to 10 scale as under :

1 - No stem canker

- 2 Small caner at the inoculation point.
- 3-4 Short brown streaks up and down the inoculation point.
- 5-6 Extensive streaks with very little stem splitting.
 - 7 Slight splitting and caner formation extending sometimes to full length of the stem.
 - 8 Extensive splitting of stem and stunting of growth.
 - 9 Same as in grade 8 but with killing of the apical bud.
- 10 Complete killing of the plants.

Grades 1,2,3 and 4 are considered as resistant (R), 5 and 6 as modererately resistant (MR), 7 moderately susceptible (MS), 8 and 9 susceptible and 10 highly susceptible. The results of this screening are presénted in table 4.

| 1 | | I | I | | I | | 1 | | 1 | | I | | 1 | | ! | | ! | | ! | | 1 | |
|------------|------|----------|-------|--------|------|--------|----|----------|------|--------------|----|--------|---|-------|----|--------|---|-------|----|--------------|-----|----------|
| ! ENT | RY | SCORE | ! | ENTRY | ! | SCORE | ! | ENTRY | ! | SCORE | ! | ENTRY | ! | SCORE | ! | ENTRY | ! | SCORE | ·! | ENTRY | ! | SCORE |
| , <u> </u> | | | , | | ! | | | | ! | 1 | ! | | ÷ | | ! | | 1 | | ! | | I | |
| ! | CI | ROSS 58- | -57 : | х в 21 | | | | | | | | | | | | | | | | | | 1 |
| ! | ! | | ! | | - | | I | | I | | ! | | - | | | | ! | | | | | |
| ! | 1 ! | 8 | ! | 2 | ! | 10 | ! | 3 | 1 | 10 | ł | 4 | ! | 3 | ! | 5 | 1 | 10 | 1 | б | !1, | /10,2/3! |
| I. | ! | lo | ! | 8 | !1 | /10,1/ | 3! | 9 | | 4 | | 10 | ! | 5 | | 11 | | 10 | | 12 | ! | 10 |
| ! 1 | 3 | 10 | ! | 14 | !1 | /8,1/1 | 0! | 15 | 1 | 3 | I | 16 | ! | 10 | ! | 17 | 1 | 5 | | 18 | !1, | /7, 1/5 |
| ۱ | | | I | | ł | | 1 | | I | | I | | ĭ | | '! | | ! | | 1 | | ! | |
| ! ? | CI | ROSS B 2 | 21 X | TVX : | 3236 | | | | | | | 1 | | | | | | | | | | ! |
| 1 | | | 1 | | I | | 1 | | I | | ł | ¥ | ! | ï | ! | | 1 | | ! | | ł | |
| 1 | L | 10 | ! | 2 | !1 | /8, 2/ | 2! | 3 | ! | 2 | 1 | ' 4 | ! | 10 | ļ | 5 | ļ | 8 | ļ | б | 1 | 10 |
| ! | 7 ! | 4 | ! | 8 | ļ | 3 | 1 | 9 | ! | 1/10. 1/7 | ļ | 10 | ! | NG | ļ | 11 | ļ | 2 | | 12 | 1 | 1 |
| ı 1 | 3 | 4 | ! | 14 | ļ | 2 | ! | 15 | ! 1/ | 2, 3/10, 1/8 | ļ | 16 | | 2 | ļ | 17 | ! | 10 | 1 | 18 | 1 | 4 |
| ! 1 |) ! | 4 | | 20 | ! | 3 | 1 | 21 | ! | 3 | ļ | 22 | 1 | 2 | | 23 | ļ | 2 | 1 | 24 | 1 | 2 |
| 1 2 | 5 ! | 2 | | 26 | 1 | 2 | 1 | 27 | ! | 2 | 1 | 28 | 1 | 4 | 1 | 29 | 1 | 3 | 1 | 30 | 1 | 2 |
| 3 | | 4 | 1 | 32 | | 3 | | 33 | 1 | 2 | I. | 34 | | 2 | Ì | 35 | ļ | 3 | | 36 | ł | 4 |
| 3' | | 2 | | 38 | | 3 | | 39 | ! | 3 | ļ | | , | | 1 | | 1 | | 1 | | 1 | |
| 1 | | - | ! | 00 | ł | 5 | 1 | 0,7 | 1 | C C | 1 | | 1 | | ! | | ! | | 1 | | ł | |
| ! | VA | RIETES | | | | | | | | | | | | | | | | | | | | ! |
| 1 | 1 | ł | ! | | 1 | | ! | | ! | | ! | | ! | | ł | | ! | | 1 | | ! | |
| !CVU (| 59 ! | 8 | !T | VU 117 | 74! | 10 | !1 | CVX 3236 | 5! | 2 | !M | lougne | 1 | 4 | 1 | vcs 14 | [| 10 | ! | IT 81 D 1137 | 1 | 2! |
| ! 58- | 57 ! | 2 | !B | 21 | ! | 10 | ! | CB 5 | ! | 10 | ! | 78-37 | ! | 1 | 1 | | ! | | ! | | ! | ! |
| ! | 1 | | ļ | | I | | ! | | I | | I | | 1 | | ! | | ! | | 1 | | I. | 1 |

TABLE 4 : BACTERIAL BLIGHT REACTIONS OF SOME BREEDING LINES, PARENTS/LOCAL VARIETIES IN THE SCREEN HOUSE AT BAMBEY.

NOTE : NG : No germination

- 17

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Out of 69 entries, 38 were resistant, 2 moderately resistant, 3 susceptible while 16 were highly susceptible. One entry did not germinate. Seven breeding lines showed heterogenic reaction indicating that they are still segregating. Many resistant lines (30) were observed in the cross B 21 X TVX 3236 than the cross 58-57 X B 21 (3) which indicate that TVX 3236 is a good donar for bacterial blight resistance. Out of 10 varieties, 5 were resistant, 1 susceptible while 4 were highly susceptible which included local improved variety B 21 and the newly introduced american variety CB 5.

III - IDENTIFICATION OF COWPEA VIRUSES PREVAILING IN SENEGAL

The virus symptoms in different regions showed slight variation. The virus encounteredin north Senegal showed light green mottle with pronounced leaf distortion while the Casamance virus showed mottle with more yellowing but rare leaf distortion. This variation in symptoms lead to a supposition that différent viruses exist in different ecological zones. To confirm this supposition and to identify the viruses occurring In Senegal, virus affected leaf sainples of cowpea were collected from different locations viz., Bambey, Nioro, Séfa and Djib'elor during October 1986. Alltogether 180 samples were collected of which 42 were from Bambey, 17 from Nioro, 14 from Sefa and 107 from Djibelor. Agar Gel Diffusion test was employed to identify the virus present in these samples using antisera of Southern Bean Mosaïc Virus, Cowpea Yellow Mosaïc Virus and Cowpea Mottle Virus obtained from International Institute of Tropical Agriculture, Ibadan, Nigéria. The summary of results VS presented in table 5.

| LOCATION | ! ! ! VARIETY | ! Nº OF ! ! SAMPLES ! | N° OF SAMPLES SHOWING THE +VE REACTION TO | | | | | | |
|----------|---------------------|--------------------------|--|------|------------|--|--|--|--|
| | ! ! | TESTED ! | SMBV , | CYMV | , CMeV | | | | |
| BAMBEY | ! 58-57 | 23 | 0 | 0 | ! 0 | | | | |
| t | Mougne | 10 | 0 | 0 | 0! | | | | |
| ! | Ndiambour | 2 | 0 | 0 | 0 | | | | |
| | Dan Haoussa | 2 | 0 ! | 0 | 0 | | | | |
| | 1137 X 58-57 | 3 1 | 0 | 0 | 0 | | | | |
| 2 | TVX 3236 X 58-57 | 1 | 0 | 0 | 0 | | | | |
| | 58-57 X VITA 1 | 1 | 0 ! | 0 | 0 | | | | |
| | TOTAL | 4 2 | 0 | 0 | 0 | | | | |
| NIORO | 58-57 | 13 ! | 3 | 0 | 0 | | | | |
| | TN 27-80 :• | 3 ! | 2 ! | 0 | . 0 | | | | |
| | Gorum-Gorum | 1 1 | 0 | 0 | 0 ! | | | | |
| | TOTAL | 17 | 5 | 0 ! | 0 | | | | |
| SEFA | 58-57 (| 8 | 2 | 0 | 0 - ! | | | | |
| | TN 49-80 | 2 1 | 0 | 0 | 0! | | | | |
| | TN 27-80 | 2 | 1 | 0 | 0! | | | | |
| | ! IN 88-83 | 1 | 1 | 0 | 0 ! | | | | |
| | Santiago | | 0 | U | | | | | |
| | TOTAL (| 14 | 4 | 0 | 0 | | | | |
| DJIBELOR | Local | 86 | 57 | 0 | 0 , | | | | |
| | 59-9 59-57 | 4 | 0 | 0 | 0 1 | | | | |
| | TN 88-83 | 2 | 2 | Ő | 0 . 0 . | | | | |
| ! | TN 27-80 | 2 | 1 I | 0 | 0! | | | | |
| ! | TN 49-80 | 3 | • 2 | 0 | 0! | | | | |
| ! | TN 3-78 | 2 | 2 | 0 | 0! | | | | |
| | 1032 | 1 | 1 | 0 | 0! | | | | |
| | TOTAL | 107 | 69 | 0 | 0 | | | | |
| 1 | GRAND TOTAL | 180 | 78 | 0 | 0 | | | | |

TABLE 5 : SUMMARY OF RESULTS OF VIRUS IDENTIFICATION

NOTE : SBMV : Southern Bean Mosaïc Virus

CYMV : Cowpea Yellow Mosaïc Virus

CMeV : Cowpea Mottle Virus

- 19 -

The results presented in table 5 reveal that all the samples collected from Bambey showed negative reaction against antisera of all the 3 viruses indicating that none of these viruses were prevailing in this region. Five samples collected from Nioro and 4 from Sefa showed positive reaction to antiserum of southern bean mosaic virus (SBMV) but all the samples showed negative reaction to antisera of cowpea yellow mosaïc virus (CYMV) and cowpea mottle virus (CMeV). Out of 107 samples collected from Djibélor, 69 showed positive reaction to antiserum of SBMV but negative reaction to antisera of CYMV and CMeV. These results clearly indicate that SBMV was predominently prevailing in Casamance during 1986 crop season. This is a first report of occurrence of SBMV in Senegal.

IV - SURVEY OF COWPEA DISEASES ...

During 1986 season, the disease pressure was comparatively less than 1985 particularly in respect of Choanephora pod rot and bacterial blight. The less incidence of choanephora pod rot may be attributed to less favourable climatic conditions while that of bacterial blight is mostly due to use of disease free seed. However, at Louga and Nioro stations, the incidence of bacterial blight was quite high on B 21 because of use of old bacterial blight infected seed.

During this year, few new diseases were noticed. Cowpea Golden Mosaïc Virus was seen in Senegal for the first time. The disease was noticed on CB 5 and some local varieties in Dagana department (Mbane and Diagoum). The serological tests carried out in the laboratory for identification of viruses revealed the presence of Southern Bean Mosaïc Virus predominently in the samples collected from Casamance while the samples collected from Bambey indicated the presence of Cucumber Mosaïc Virus. Both these viruses are also not reported from Senegal previously. The presence of Aphid-borne Mosaïc Virus in Senegal was detected in the past. As such there are now 4 different viruses encountered on Cowpea in Senegal.

Bacterial pustule, which was reported to be seen in CILSS trial in Casamance during last year, was also noticed in Louga and Diourbel regions during 86 season. The disease was mostly restricted to CB 5 variety in Mini-kit trials. At few locations it was also seen on B 21. No other variety showed incidence of bacterial. pustule.

- 20 -

Amongst the other diseases noticed cercosporiose and web blight are quite important. Both the diseases occur on large scale but mostly at the end of crop cycle.

A parasitic weed (<u>Striga gesneroïdes</u>) was noticed on CB 5 and B 21 at one location (Kebemer) in Louga region. Constant vigillance is necessary as this weed may be highly destructive and become one of the limiting factors in Cowpea Production. One of the -local varieties of Senegal (58-57) has been observed to be resistant to striga at IITA centre in Burkina Faso,

Station wise report of various diseases encountered in the experimental plots at the research stations as well as mini-kit trials on the farmers' fields is furnished in table 6.

TABLE 6 : COWPEA DISEASES ENCOUMTERED IN SENEGAL

RESEARCH STATIONS :

BAMBEY:

| 58-57 | 401 | Virus, | Cei | ccosporios | е | | | |
|-------------|--------------|----------|-----|------------|-------|---------|-----|-----|
| Mougne | - | Virus | | | | | | |
| Gorum Gorum | m | - Virus | | | | | | |
| B 21 | - | Bacteri | al | blight, | Choar | nephora | pod | rot |
| CB 5 | 18 51 | Bacteria | al | blight, | Choan | lephora | pod | rot |
| Ndiambour • | | Virus, | Cho | oanephora | pod | rot. | | |

Cercosporiose, web blight, bacterial blight and virus were noticed in the Disease Nursery on some of the germplasm entries (See Table 2 of this report).

NIORO :

58-57 - Virus, Cercosporiose
B 21 - Bacterial blight, Choanephora pod rot, web blight
TVX 3236 - Choanephora pod rot
Santiago - Bacterial blight, web blight, virus
TN 49-80 - Virus
Gorum Gorum - Virus
TN 27-80 - Virus

DJIBELOR :

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| | 58-57 | - Virus |
|-------------------|-------------|---------------------------------------|
| | Santiago | - Bacterial blight, web blight, virus |
| | TN 78-80 | -Bacterial blight, Cercosporiose |
| | TN 49-80 | -Virus |
| | CB 5 | - Virus |
| | TN 1-2-1 | - Web blight ' |
| | Local | 🛥 Virus, Cercosporiose, web blight. |
| SINTHIOU | MALEM : | |
| | 58-57 | - Virus |
| | TN 49-80 | -Virus |
| <u>SEFA</u> : | | .2* |
| | 58-57 | - Virus |
| | TN 49-80 | - Virus ' |
| | TN 27-80 | - Virus |
| | TN 88-83 | - Virus |
| LOUGA : | | |
| | CB 5 | - Web blight |
| | B 21 | - Bacteriai blight |
| | 58-57 | - Virus |
| | TN 1-2-1 | - Bacterial blight |
| NDIOL : | | |
| | 58-57 | - Virus |
| | Gorum-Gorum | - Virus |
| FANAYE : | | |
| | 58-57 | - Virus |
| THILMAKHA | : | |
| | 58-57 | -Virus |
| | Gorum-Gorum | - Virus |
| <u>MINIKITS</u> : | | |
| GATT : | | |

| 58-57 | - Virus |
|-------|--------------------|
| B 21 | 🛥 Bacterial blight |

- 23 -

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SAM-THIALE :
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| | B 21 | Choanephora pod rot, cercosporiose, web blight |
|------------|---------------------|---|
| | CB 5 | - Choanephora pod rot, web blight, cercosporiose, Bacterial |
| | | blight and Bacterial pustule. |
| | 58-57 | Virus and Cercosporiose |
| | TVX 3236 | - Choanephora pod rot |
| | Mougne | - Virus, Choanephora pod rot |
| NGUITH : | | |
| | 58-57 | - Virus |
| | B 21 | - Web blight |
| | CB5 | - Bacterial blight, Bacterial pustule, web blight |
| KER BOUM1 | • | |
| | CBP | - Bacterial pustule web blight Choanephora pod rot |
| | сц <u>ј</u> в 01 | - Bacterial blight Choanenhora nod rot web blight and |
| | D 21 | Bacterial pustule |
| | 58-57 | |
| | Ndiambour | \sim = Web blight |
| | Warambour | |
| KEBEMER : | | |
| | 58-57 | - Virus |
| | CB 5 | - Bacterial pustule, virus, Choanephora pod rot, striga |
| | B 21 | - Striga |
| THI LMAKHA | : | |
| | 58-57 | - Virus, Cercosporiose |
| | | |
| FARMERS' F | TELDS OTH | <u>SR THAN MINIKIIS</u> : |
| MBANE (Dag | ana) : | |
| | CB 5 | - Golden Mosaïc Virus, Web blight |
| DIAGOUM (D | agana) : | |
| | CB 5 | - Golden Mosaïc Virus |
| | Local | 🛥 Golden Mosaïc Virus |
| SINE DIEN | G (Louga) | |
| | | . Bacterial nustule |
| | CD0 | - DACECTIAT PADEATE |

TOUBA THIARE (Louga) :

58-57 - Virus

THIAKHAR (Bambey) :

CB 5 - Bacterial pustule, Web blight, Virus, Choanephora pod rot 58-57 - Virus, Web blight

V - SEED PRODUCTION :

an

During 1985 crop season the seed multiplication plots of B 21 and 58-57 varieties planted by the seed production officer showed incidence of bacterial blight and virus respectively. In order to minimise the seed borne inoculum of these diseases, rigorous roguing of diseased plants was carried out. The seed thus obtained was used for further multiplication during summer and rainy seasons of 1986 as under.

| | | | | 58-57 | | : | 3.0 | ha |
|--------|--------|----|---|--------|----|---|------|----|
| Rainy | Season | 86 | ; | Bambey | 21 | : | 3.5 | ha |
| Summer | 86 | | 1 | Bambey | 21 | ; | 1.04 | ha |

These seed multiplication plots were inspected periodically for bacterial blight and virus. During both the seasons the seed multiplication plots were observed to be free from bacterial blight and virus.

SUMMARY

1. The results of screening for Choanephora pod rot resistance revealed that there is no variety which is free of Choanephora. However, the following 14 varieties showed a very low incidence as well as intensity (0.5 grade) of the disease. Moreover, no other disease was seen on these varieties. Since it is a first year of testing, the results need to be confirmed.

VARIETIES : 66-14, 60-3, 38-84, 59-24 T, TW 3629, 58-75, 78-12, T W 1977, 58-60, 59-79 D3, 58-41, 78-29, 78-5 and 66-72.

2. Eighty one progenies of 58-57 X IT 81 D-1137 cross and 33 progenies of B 21 X TVX 3236-01G both in F6 generation were screened for virus resistance under field conditions togetherwith 9 F2 families. Twenty six progenies of 58-57 X IT 81 D-1137 did not show virus incidence while all the entries from B 21 X TVX 3236-01G were free from virus. All the F2 families segregated for virus reaction except 59-9 X B 21. One hundred and forty plants having virus resistance and desirable agronomic characters were selected for further testing. Virus incidence on some of the entries from uninoculated replication indicated that the vector transmission was very effective. Cowpea leaf beetles <u>Ootheca</u> <u>mutabilis</u> were noticed in the field which might have acted as vector for transmission of the virus.

A screen house test of advance generation material conducted for confirming the results of field test yielded 14 virus resistant entries from the cross 58-57 X IT 81 D-1137. However, only 4 progenies viz., IS 86-282 N, IS 86-299 N, IS 86-240 N and IS 86-253 N were found resistant in both field as well as screen house test. The progenies of the cross B 21 X TVX 3236 were all free in the field test while 5 progenies developed virus in the screen house test. Amongst the varieties B 21 and TVX 3236 continued to be virus free. TVU 393 and 1185 were also observed to be resistant. Local varieties viz., Casa 3, Casa 16 and 58-111 were found to be susceptible but 59-9 and Ndiambour did not show virus symptom which is contradictory to field observations.

3. Sixty seven entries comprising of 57 breeding lines and 10 variéties yielded 38"bacterial blight resistant lines which included 2 local varieties viz., 58-57 and Mougne. Another local variety viz., B 21 and american variety CB 5 were observed to be highly susceptible.

- 25 -

4. • One hundred and eighty virus affected leaf samples were collected from various locations and different varieties for identifying the virus occurring on Cowpea in Senegal. Agar gel diffusion test was employed for the identification using antisera of SBMV, CYMV and CMeV obtained from IITA, Nigeria. Seventy eight samples mostly from Djibelor showed positive reaction to antiserum of SBMV indicating that this virus was predominant in Casamance during 1986 season. This is a first report of SBMV on cowpea from Senegal.

5. Survey of cowpea diseases revealed that the disease pressure in general was less than 1985 particularly in respect of choanephora pod rot and bacterial blight. Few new diseases were noticed on cowpea during 1986 season such as cowpea golden mosafc virus, southern bean mosaîc virus and cucumber mosaïc virus. All these diseases have not been reported on cowpea in Senegal. Amongst the other diseases noticed, cercosporiose and web blight are quite important. Both the diseases occur on large scale but mostly at the end of crop cycle. Striga was also noticed at one location.

6. Rigorous roguing of bacterial blight and virus affected plants was carried in the seed multiplication plots during 1985 season. As a result, no bacterial blight and virus infection was encountered in the seed multiplication plots during summer and rainy seasons of 1986.

RESEARCH PROGRAM FOR 1987

- Screening varieties as well as elite breeding material for resistance to major diseases such as virus, bacterial blight, choanephora pod rot, etc... in the field and/or in the screen house.
- 2 Surveillance of Cowpea diseases in minikit trials as well as in the farmers' fields in Louga and Diourbel region.
- 3 Vigillance of cowpea seed multiplication plots for presence of seed borne diseases and undertake roguing for disease free seed production.