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SYNTHESIS OF THE RESEARCH  
ACTIVITIES ON GROUNDNUT PATHOLOGY 1988

BY

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Experiments on resistance screening and chemical control against groundnut leaf spots were continued during 1988. Besides, some work on soil fungi causing seed rots and seedling diseases were initiated. The highlights of the results obtained are furnished below.

## I - RESISTANCE SCREENING AGAINST LEAF SPOTS

### 1.1 - Screening germplasm entries

In all 100 entries were screened against natural infection of leaf spots at Hioro which included 94 entries having low leaf spots infection during 1987 season. The sowing was done on 30.07.88. The disease started appearing in the third week of August and progressed considerably. The disease pressure was quite high by the time of maturity. The observations recorded for disease score in 0-10 scale indicated that the following five entries had low disease score and can be rated as moderately resistant.

48-154, 56-311, 48-44, 56-295 and 56-326.

These entries have consistently shown low disease score for the last 3 seasons.

## II - CHEMICAL CONTROL OF LEAF SPOT DISEASES

The experiment started in 1987 for the chemical control of leaf spots was continued during 1988 with addition of one more chemical VIZ. , Sumi 8 at 50 and 100 g doses. Sowing was done on 15.07.88. The leaf spots had started appearing in the second week of August. In all 4 fungicidal sprays were given on 17.08, 5.09, 16.09 and 28.09.88. Observations on leaf spots score were recorded at the time of each fungicidal spray. Final observations were recorded on the leaf spots severity based on the leaf area damaged.

The leaf spots intensity was quite high. The results of final leaf spots score recorded on 28/09 revealed that the differences in treatment means were highly significant. Benomyl at 200 g dose exhibited the lowest leaf spot score followed by Sumi 8 at 100 g dose. Amongst the varieties, 73-30 had significantly more leaf spots score than 73-33. But the interaction between the varieties and the fungicides was non significant.

The leaf spots severity observations recorded one month after the final disease score showed the similar trend of results except for the differences between the two varieties which were non significant. This shows that both the varieties are equally susceptible to leaf spots.

The results of yield data revealed that the differences amongst the various treatments were highly significant. Benomyl at 200 g dose has given the highest yield which was significantly more than all other treatments except Benomyl at 100 g dose. Last year also Benomyl at 200 g dose had given the highest yield which was significantly more than all the treatments including Benomyl at 100 g dose.

### III - RESISTANCE SCREENING AGAINST SEED ROTS AND SEEDLING DISEASES DUE TO SOIL FUNGI

#### 3.1 - Resistance screening against *Aspergillus niger*

A set of 100 gersplasm collections were screened for crown rot/collar rot resistance in the field at Nioro. All entries were sown in 2 replications. Entries in one replication were inoculated with *A. niger* inoculum raised on the groundnut shells. Inoculum was added to each seed hole along with the seed at the time of sowing. Observations were recorded for germination and the collar rot incidence,

Observations on germination revealed that 3 varieties VIZ., 55-511, 58-399 and 59-6 had the same germination percentage in both the replications. This indicates that they possess resistance to *A. niger* pathogen. The following 1% varieties have shown the difference of 10 % or less in the germination percentage of inoculated and uninoculated replications indicating that they also possess some resistance to *A. niger*. U4-47-7, 48-101, 56-295, 59-145, 55H46E17, 58-157, 73-33, 5'7-6'7, 56-370, 59-258, J 11 and 58-408. Two varieties VIZ., U4-47-7 and J 11 are reported to be resistant to *A. niger*. These varieties did not show incidence of collar rot also. However, the collar rot incidence in general was very low. Only 10 entries showed collar rot incidence even under inoculation.

### IV - CONTROL SEED ROTS AND SEEDLING DISEASES THROUGH SEED TREATMENT

The efficacy of some seed dressers was tested in the field at Nioro against seed rots and seedling diseases of groundnut caused due to soil fungi particularly *A. niger*, *A. flavus*, *Macrophomina phaseoli* and *Rhizopus* sp. Two seed types VIZ, station seed and farmers' seed were used for the experiment. Seed treatment of respective seed dresser was given 2 days before sowing. Observations were recorded for germination, plant stand and collar rot incidence. Yield data was recorded after the harvest.

The results for germination revealed that all the treatments have given significantly higher germination than control. Granox at 2 g gave the highest germination followed by Rizolex 2 g. The <sup>seed</sup> types also differed significantly. Very high germination was observed in station seed over farmers' seed. However, the interaction

amongst the various seed treatments and the seed types was non significant. Similar results were obtained in case of plant stand data. When the granox dose was increased from 2 g to 4 g, the germination percentage and plant stand were further improved in case of station seed but in case of farmers' seed there was no increase in germination and plant stand. This shows that not only the seed treatment but also the seed quality is very important to obtain good germination and plant stand.

The yield differences amongst the various treatments as well as in between 2 seed types were non significant. However, in both the cases the difference was approaching the level of significance. When the means were tested at 10 % level of significance, it was found that granox at 2 g dose gave significantly more yield than control.

Macrophomina phaseolina was the most common micro organism found associated with the seed rots which was followed by bacteria. A. flavus was the next important organism responsible for seed rots in 5 treatments. Incidence of A. niger and Fusarium sp. was minor.

Few afla root plants were noticed in farmers' seed. Collar rot incidence was low <sup>in</sup> general. It was totally absent in all the treatments of Rizolex and Granox in case of station seed while in case of farmers' seed Granox 4 g and Sumi 8 2 g treatments did not show any collar rot incidence.

#### V - SUMMARY

Five entries viz., 45-154, 56-311, 48-44, 56-295 and 56-326 exhibited low leaf spots score when tested at Niro under heavy natural infection. These entries have consistently shown low disease score for last 3 seasons.

The results of chemical control experiment for leaf spots showed the similar trend of results as that of last year. Benomyl at 200 g dose exhibited the lowest leaf spots score followed by Sumi 8 at 100 g dose. The differences in the disease severity of two varieties as well as the interaction in between fungicides and varieties were non significant. As regards yield data Benomyl at 200 g dose has given the highest yield which was significantly more than all other treatments except Benomyl at 100 g dose.

A field screening of 100 germplasm collections against A. niger yielded 3 varieties VIZ., 55-511, 58-399 and 59-68 having field resistance. Another 12 varieties also showed low incidence which included 2 varieties VIZ., U4-47-7 and J 11 received from ICRISAT.

Seed treatment with granox at 2 g dose gave the highest germination as well as plant stand followed by rizolex 2 g. Seed treatment with granox at 1 g dose also gave the highest yield. Station seed was much superior than farmers' seed in all respects. The germination, plant stand and also the yield was more in the plots sown with station seed than the plots sown with farmers' seed.

Macrophomina phaseolina and bacteria were the most common micro organisms found associated with the seed rots.