

Management of Groundnut Diseases

Twenty four improved cultivars and one hundred ninety eight advanced breeding lines of groundnut (*Arachis hypogaea*) germplasms were evaluated during kharif crop season of 2002 and 2005 at ICAR research farm in Tripura.

Leaf spot, particularly early leaf spot (*Cercospora arachidicola*), was the major disease under natural infective condition. None of the genotypes were immune to leaf spot disease. Among the 24 improved cultivars studied, the disease was least in CSMG-84-1 and M-13 with disease rating score range 3 to < 5, suggesting them as moderately resistant in 1-9 scale, where 1 = no disease and 9 = 81-100% infection. The occurrences of late leaf



Early leaf spot disease of groundnut & conidia of *Cercospora arachidicola*

spot (*Phaeoisariopsis personata*), rust (*Puccinia arachidis*) and stem rot (*Sclerotium rolfsii*) were very less in all the varieties. Seven genotypes, viz., NRCG-813, NRCG-935, NRCG-945, NRCG-992, NRCG-996, NRCG-1001 and NRCG-11734, of advanced breeding lines were found as resistant (2 - < 3) against leaf spot disease, while 12 genotypes were moderately resistant (3 - < 5), 33 genotypes were moderately susceptible (5 - < 7) and 146 genotypes were susceptible (7 - 9). The resistant genotypes are being suggested to utilize in any future breeding programme of groundnut improvement.

Leaf spots [Early Leaf Spot (ELS) and Late Leaf Spot (LLS)] and rust diseases affected groundnut (JL-24) grown during 'Kharif' season of Tripura under 'Tilla' (up) land condition for the period 2002 to 2004. The fungicidal spray with carbendazim was the most effective to control leaf spot diseases, followed by propiconazole.

However, carbendazim spray sharply increased the rust intensity. Other fungicides, viz., COC, Hexaconazole, Kitazin, Mancozeb,

Ridomyl, Tridemorph and Wettable Sulphur, were less effective in minimize leaf spot diseases in groundnut, although, rust was well controlled with tridemorph, where its intensity was least. In addition, mancozeb and COC were effective to minimize rust disease for a short period (15 days) after last spray.



Late leaf spot disease of groundnut & conidia of *Phaeoisariopsis personata*

The combinations of carbendazim and mancozeb, carbendazim and tridemorph and carbendazim and COC mixing two solutions separately in 1:1 (v/v) ratio minimized leaf spot disease in field. Its intensity in former two combinations was at par with the disease intensity observed with carbendazim alone. Simultaneously, rust intensity was less than that with carbendazim for all the treatments of combined solutions. The most effective combination of fungicides for controlling both leaf spot and rust diseases was carbendazim and tridemorph mixture.



Rust disease of groundnut & urediospores of *Puccinia arachidis*

Leaf spot disease was first observed on 30 days after sowing. Thereafter, its intensity gradually increased up to the last day of observation i.e. on 105 days of crop age. The differential assessment of leaf spots caused by *C. arachidicola* (ELS) and *P. personata* (LLS) were made under microscope in laboratory. The results indicated that ELS was predominant throughout the crop season and occurred solely up to 75 days of crop age. In groundnut, LLS appeared on 90 days of crop age. At that time 7.8% spots were developed by LLS while 92.2% spots were by ELS. The number of LLS was increased up to 24.8% on 105 days of crop age. The pod yield was increased by 1.9, 4.1, 5.4, 5.7, 6.7, 6.7, 8.0, 28.7, 32.2, 35.4, 37.3 and 40.5% over control with the spray of COC, mancozeb, kitazin, wettable sulphur, hexaconazole, tridemorph, ridomyl, propiconazole, carbendazim, carbendazim and COC, carbendazim and mancozeb, and carbendazim and tridemorph, respectively. Considerable increase (28.7-40.5%) of pod yield was observed with carbendazim and all of its combinations with other fungicides used for rust control and with propiconazole without showing any significant difference amongst the treatments, although maximum increase in yield was observed with the combined solution of carbendazim and tridemorph.

The rust can effectively be controlled with tridemorph for longer period and with mancozeb or COC for shorter period. Furthermore, it is suggested that up to 45 days of crop age carbendazim (0.05%) or any other leaf spot controlling fungicide is enough to spray followed by one or two sprays of the combined solutions of carbendazim and tridemorph or carbendazim and mancozeb solutions on 60 day onwards at 15 days interval to suppress the prevailing diseases.