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## Morpho-physiological and molecular Assessment for foliar disease and oleic acid content using gene based SSR markers in groundnut (*Arachis hypogea* L.)

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Cultivable groundnut (*Arachis hypogea* L.), is an important oilseed crop with an allotetraploid genome (AABB,  $2n=4x=40$ ), which is being cultivated and practiced widely. It is self-pollinated legume and excellent cash crop, cultivated in more than 100 countries for edible oil and food uses. Like other crops, several biotic and abiotic factors affect yield of groundnut including foliar fungal diseases. Rust (caused by *Puccinia arachidis*) and Late Leaf Spot (LLS) (caused by *Cerco sporidium personatum*) are two major foliar fungal diseases of groundnut and can cause yield loss upto 70%. Developing advance varieties resistant to various stresses is the best and viable option to minimize economic losses for farmer and is Eco-friendly also. Integration of molecular breeding is the best option to improved variety with trait of interest. In current study, genetic diversity was studied in Forty two germplasm lines and four cultivars of diverse groundnut set using 7 morphological traits and Simple Sequence Repeat (SSR) markers. Morphological characters were taken for yield related traits were observed i.e., Days to Maturity, Number of Pods/ Plant, 100 Pod weight (gm), Karna Yield (gm/plant), 100 Karna Weight (gm), Shelling percentage and Sound Mature Karna. In this study morphological analysis has been conducted with 7 parameters and genetic distance was measured by NTSYS2.0 to show diversity. Gene based markers were used for screening of oleic acid and foliar diseases. Total 5 germplasms were identified having foliar disease resistance and 16 germplasms have been

identified having high oleic acid content using gene based markers. Molecular characterization along with morphological analysis show an authentic result and identified highly diversified lines of Groundnut along with some germplasms lines having foliar disease resistance and high oleic acid content. Molecular characterization along with morphological analysis identified several lines having resistance for late leaf spot and rust along with higher yield performance which can further be utilized in crop improvement programme.

### Methodology and Theoretical Orientation: Measurement of Morphological Traits

A set of 42 germplasms and four varieties were evaluated for 7 morphological traits. Days to Maturity, Number of Pods/ Plant, 100 Pod weight (gm), Karna Yield (gm/plant), 100 Karna Weight (gm), Sound Mature Karna and Shelling % were observed for five plants and there mean value was considered for further analysis. The Analysis Of Variance (ANOVA) of morphological traits for Standard Error (S.E.), Critical Difference (CD) and Coefficient of Variation (CV) was performed. The coefficient of correlation among all morphological traits at maturity was calculated using SPSS ver19.0 software. The similarity matrices were used to construct a dendrogram for all the germplasm lines and genotypes using NTSYS-pc 2.0