

## Principal Component and Correlation Analysis of Groundnut Germplasm (*Arachis hypogaea*.L.) towards Pod Filling Ability

S.A.C.H. Senaweera<sup>1\*</sup>, G. Thirukkumaran<sup>1</sup>, S.J. Arasakesary<sup>2</sup> and R. Balasooriya<sup>2</sup>

<sup>1</sup>Department of Agricultural Biology, Faculty of Agriculture, University of Jaffna, Sri Lanka

<sup>2</sup>Regional Agriculture Research and Development Centre, Kilinochchi, Sri Lanka

\*118harshi@gmail.com

Groundnut, *Arachis hypogaea*. L., which belongs to the family Fabaceae, is a popular oil crop in Sri Lanka. Pod is the economically important parts of the groundnut. However, pod filling is one of the significant yield components and it is a primary problem in groundnut cultivation that decides the yield and demand of the Groundnut. Therefore, the present study was conducted to select the characters correlated with pod filling ability. Specifically, to identify the cause and effect of the relationship between different pairs of characters, select the parents for future breeding programs and improve a complex character like pod filling ability. Therefore, this study was carried out from February to May 2021 to perform principal component and correlation analysis of selected groundnut varieties and few advanced breeding lines toward their pod filling ability. Seeds of selected twelve germplasms viz., *Lanka Jumbo*, *ANKG1*, *Tissa*, *Indi*, *Tikiri*, *KCGN1*, *K2*, *K3*, *K4*, *K5*, *MUK* and *MU* lines were used. This experiment was conducted using Randomized Complete Block Design with three replicates each with twelve plots. Fifty-four seeds per line were planted in each plot. Selected phenotypic characters of groundnut were recorded from ten randomly selected plants from each plot. Principle component and correlation analysis were carried out on all recorded observations related to pod filling. The results revealed that the number of days to first flowering, number of days to 50% flowering, plant height at 50% flowering and plant height at maturity were the principal components that had a higher influence on traits within the analyzed components. Moreover, the number of days to 50% flowering and number of pegs per plant had a greater correlation with grain filling. Therefore, this study concludes that the selection based on these characters will lead to simultaneous improvement in pod filling in Groundnut.

**Keywords:** Groundnut, Pod filling, Principle components, Shelling percentage