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populations and evaluated for its yield performance. The genotype was tested under multi location trials in Gujarat during *kharif* 2014 to 2018. It was screened for reaction to major pests (thrips, jassids and *Spodoptera*) as well as major diseases (rust, ELS, LLS, stem rot and collar rot) under field conditions. The yield data were analyzed for a randomized block design as suggested by Panse and Sukhatme (1985).

Of 17 evaluation trials, this entry has given 2722 kg/ha of pod yield as compared to 2352 and 2344 kg/ha of pod yield of check varieties GG 11 and GJG 17, respectively. Pod yield increase was to the tune of 15.74% and 16.10%, respectively. This genotype also exhibited higher kernel and oil yields than the check varieties. The entry GG 41 was comparable to the checks against tikka and rust diseases, while stem rot and collar rot incidence was low in GG 41 as compared to the check varieties. The pest infestation was lower in GG 41 as compared to the check varieties. Based on its consistent superior performance over locations and years, GG 41 has been released for general cultivation in the *kharif* groundnut growing areas of Gujarat. By virtue of superior performance for high pod and kernel yields and oil with better quality characteristics, the newly developed variety GG 41 has been identified for release by 15th Combined Joint AGRESCO meeting of SAUs held on 29 April - 1 May 2019 at AAU, Anand (Anonymous, 2019) for general cultivation in the kharif rainfed spreading groundnut growing areas of the entire Gujarat State

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Variation in quality traits of different seed sizes of groundnut

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ABSTRACT

Groundnut is an energy rich oilseed and food crop. There is no information on quality traits of different seed sizes of a same groundnut verity. Therefore, in present investigation seven groundnut varieties i.e. Girnar 2, Girnar 3, GJG 9, GJG22, GG 20, KDG 128 and TG 37A were used to find out variations in quality traits of different seed sizes of groundnut. Small seed of groundnut possessed higher content of soluble sugars and protein while bold seeds had higher oil content. Oleic acid content was higher in bold seeds while linoleic acid was higher in small seeds.

Keywords: Groundnut, Linoleic acid, Oleic, Quality, Seed size, Soluble sugars

Groundnut is an energy rich oilseed and food crop. About 50% of its produce is used for direct consumption especially as value-added products like roasted and salted groundnuts, groundnut-candy, peanut-butter etc. After grading of groundnut kernels bold seeds are generally used for direct consumption in various forms of value added products. Medium and small sized kernels are either used for oil extraction or as a bird feed. There is no information of quality traits of different seed sizes of same groundnut varieties.

Seven groundnut varieties, Girnar 2, Girnar 3, GJG 9, GJG 22, GG 20, KDG 128 and TG 37A were used. Bold, medium and small kernels were graded by hand picking. Hundred seed weight of graded kernels were recorded. Oil, protein and total soluble sugars contents were analysed by NIR. Sugar and fatty acid profiles were estimated using Ion chromatograph (Bishi *et al*., 2015) and Gas chromatograph (Misra and Mathur, 1998) respectively. Data were statistically analysed for significance.

Variation of oil content in small seed of these seven cultivars ranged from 4% (GJG 9) to 12% (Girnar 2). Bold seeded cultivars (Girnar 2, GJG 22 and GG 20) had higher variation for oil, protein and sugar contents between bold and small kernels than that of normal (Java) seeded cultivars (KDG 128, GJG 9 and TG 37A). Results of sugar profiling showed that inositol, sucrose and raffinose contents reduced with increase in seed size. Small seeds of all the genotypes possessed higher inositol, sucrose and raffinose content while lower trehalose content compared to medium and bold seeds of respective cultivars. Fatty acid profile also differed with seed size. Oleic acid content was significantly lower in small seeds of GG 20 and GJG 22 (52 and 54%) as compared to their medium (60% and 64%) and bold seeds (63% and 68%). These results showed that sugar and protein biosynthesis takes place early during seed maturation than oil biosynthesis. Similarly higher content of oleic acid in bold seeds showed that oleic acid accumulated later during seed maturation. Thus, to have higher proportion of oleic acid in oil, medium and bold seeds should be used for oil

extraction. Whereas, medium and small seeds of groundnut can be used for table purpose that requires low oil, high sugar and protein contents.

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Optimizing maturity index calculation of groundnut in selected varieties at Coimbatore condition

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ABSTRACT

The present study was taken up to evaluate the efficiency of the maturity index calculating methods *viz*., shell out method, seed hull ratio maturity index, hull scrape method and maturity profile board (MPB) method in determining the maturity duration of ten groundnut varieties CO 7, ICGV 07222, VRI 6, VRI 8, GPBD 4, VRI 3, Chico, Gangapuri, ICGV 91114 and ICGV 93468 at Coimbatore. In Shell out and hull scrape method maturity indices ranged from 70-80% and in seed hull ratio maturity index it ranged from 2.9-3.6 which revealed the highest number of matured pods with maximum weight. In hull scrape method and MPB the colour of mesocarp exactly revealed maturity status of groundnut pods with a strong correlation with yield. Thus, maturity index in groundnut is more reliable when calculated by hull scrape method in combination with maturity profile board (MPB) to determine the days until digging.

Keywords: Groundnut, Hull scrape, Maturity profile board, Shell out method, Seed hull ratio

Groundnut pod development takes place in the soil making it difficult to correctly judge the maturity of the crop. Over the past few decades, several methods have been used to assess groundnut maturity. The present study considered shell out, seed hull ratio maturity index, hull scrape and maturity profile board (MPB) methods and their efficiency for predicting the correct date of harvest in groundnut.

Ten groundnut varieties with wide difference in days to maturity *viz*., CO 7, ICGV 07222, VRI 6, VRI 8, GPBD 4, VRI 3, Chico, Gangapuri, ICGV 91114 and ICGV 93468 were taken up for the study in two seasons *rabi* 2018-19 and *kharif* 2019 at Department of Oilseeds, CPBG, TNAU. A range of five different days to maturity check was planned with five days interval for all the varieties under study. In each harvest of all the varieties, the maturity index by shell out method (Miller and Burns, 1971), seed hull ratio method (Pattee *et al.*, 1977), hull scrape method and Maturity Profile Board (Williams and Drexler, 1981) was calculated along with average yield. Coefficient of correlation was calculated among days after sowing, maturity indices and average pod yield and tested for its significance.

In all the varieties, the highest average yield in both the seasons clustered around the third and fourth harvests which were scheduled to be the mean maturity duration of the varieties. On the whole, the maturity duration of the varieties was higher during *rabi* season in comparison to those in *kharif* season. Thus, from the study, the optimum maturity indices for predicting the date of harvest for groundnut are summarized in the Table.1. The hull scrape method of maturity index showed highest positive correlation of 55% with average pod yield while shell out method stood second with 48% correlation. Thus, the maturity indices calculations by hull scrape method and Maturity Profile Board method which are based on mesocarp colour were most reliable. A groundnut cultivator is suggested to examine the mesocarp colour and calculate the maturity index according to the Hull Scrape method. If the maturity index is under 70%, the samples may be placed on the MPB to determine a prediction for harvest date.

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