RESEARCH ARTICLE

PHYSIOLOGICAL PLASTICITY OF 60 CULTIVARS OF *ARACHIS HYPOGAEA* UNDER NATURAL DROUGHT CONDITIONS OF SEMIARID REGION IN INDIA

Kuldeep Singh A. Kalariya*[1,2], Amrut Lal Singh[1], Rupesh Nakar[1,3], Pratap V. Zala[1], Koushik Chakraborty[1,4] and Chhabilbhai B. Patel[1]

[1]*ICAR Directorate of Groundnut Research, PB 5 Junagadh, Gujarat 362 001, India*
[2] *ICAR-Directorate of Medicinal and Aromatic Plants Research, Boriavi, Anand, Gujarat 387 310, India*
[3]*Department of Botany, Sheth PT Arts and Science College, Godhra, Gujarat 389001, India*
[4]*Central Rice Research Institute, Bidyadharpur, Cuttack, Odisha 753006*
Email: Kuldeep_ka@yahoo.co.in

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Abstract: Physiological plasticity of sixty peanut cultivars, belonging to four botanical groups, were evaluated during *Kharif* season under well-watered (with protective irrigation; P) and natural drought(under rain-fed;RF) conditions and compared for physiological and yield attributes to identifythe promising ones. The days required for 50% flowering varied from 24.5-34.0 days and 26.0-37.7 days with an average of28 and 30 days in P and RF crops, respectively. The natural drought under RF condition delayed crop maturity (112-132 days) as against 113-119 maturity days in P.Interestingly, 30 cultivars matured within 113 days at 2130 ºC degree days under both the condition indicating their adaptability and plasticity to drought. Though themean pod yield of peanut cultivars were 1260 kg ha^{-1}under P and 1130 kg ha^{-1}under RF conditions, cultivars ICGS 5, JGN 23, AK 265, GG 5, GG 11, GG 16, Girnar 1, AK 159, SBXIshowed > 1300 kg ha^{-1} pod yield under both the conditions. The cultivars with early flowering, high SCMR,low SLA, high yield and HI,and early maturity showed the escape mechanism and were considered as most promising for rain-fed cultivation, where there is greater likelihood of drought situation.Our study showed, Spanish bunch (VUL) group was more suitable compared to Virginia bunch (HYP), Virginia runner (HIR) and Valencia (FST) peanut group for desirable traits in rain-fed condition. The cultivars JGN 23, SB XI, and Girnar1 showed most of the desirable characters with high physiological plasticity and hence, can be of immense use for rain-fed conditions.

Keywords: Degree days,Flower initiation, Natural drought, Peanut, Physiological Plasticity

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