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Backcross breeding in groundnut (*Arachis hypogaea* L.)

SHRIDEVI A. JAKKERAL^{1*}, H.L. NADAF², M.V.C. GOWDA³, R.S. BHAT⁴, BABU MOTAGI⁵, GANAPATI MUKRI⁶, PRAKASH GANAGSHETTY⁵, ANNARAI TALAWAR⁷ & SHASHIKALA KOLAKAR⁸

¹ Zonal Agricultural and Horticultural Research Station (ZAHRS), Brahmavar, Karnataka, India 576 213;

²Department of Genetic and Plant Breeding, UAS, Dharwad, Karnataka, India -580005;

³Project Coordinator (Small Millets), ICAR, GKVK, Bangaluru, India-560065;

⁴Department of Agricultural Biotechnology, UAS, Dharwad, Karnataka, India-580005; ⁵International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Hyderabad, 502324, India;

⁶Directorate of Maize Research, New Delhi, India-110012; ⁷Department of Genetics and Plant Breeding, University of Agricultural Sciences, Raichur 580 005, India; ⁸Dept. CIB, College of Horticulture Mudigere, Chichmangalore- 577132 Karnataka, India

Rust caused by *Puccinia arachidis* Speg. is the most serious disease of groundnut and causes substantial yield loss and reduces the fodder and seed quality. Recombinant inbred lines (F₆) were generated by SSD method from cross GPBD-5 × GPBD-4 and the rust resistant plants were backcrossed to the recurrent parent (GPBD-5) to develop a backcross population (BC₁F₄). The objective of this experiment was to

study the possibilities of linkage break-down between yield component traits and rust resistance in groundnut. Analysis of data revealed that there was a shift in correlation from negative (F_6) to positive significant direction (BC_1F_4) between pod yield per plant with plant height and between plant height with number of primary branches. Similarly there was linkage break-down between negative significant to positive significant association of number of primary branches with number of pods per plant, kernel yield per plant and shelling percent at both genotypic and phenotypic levels. Altogether a desirable shift in association and the proof of broken repulsion phase linkage and release of concealed variability, which is useful in plant breeding, provides a lot of scope for selection. Unchanged negative association between pod yield per plant with reaction to rust and shelling percent in both phenotypic and genotypic level in both the populations, indicated the operation of strong linkage blocks and which requires an intensive selection to combine disease resistance with yield. Otherwise inter-mating of highly extreme segregants in the populations also would cause breakage of these stubborn linkages. Thus, for yield component traits, backcrossing of selected plants is more rewarding than the single cross and advance by single seed decent method of breeding in groundnut.