For the first three crosses, and also overall, the numbers of normal and chlorotic plants fitted into a 3:1 ratio. Cross H 208 x NP 62 showed an excess of chlorotic plants, and BDN 9-3 x NP 62 had excess of normal plants. Forty F_3 families (from F_2 single plants) were grown from each cross during the 1982/83 season. The F_3 progenies of chlorotic F_2 plants bred true. The remaining F_3 families were classified into nonsegregating normal, segregating normal and segregating chlorotic plants. The frequencies of progenies in different classes along with Chi-square values are given in Table 2. In all the crosses, the F_3 families fitted into the expected 1:2:1 ratio. This confirms that susceptibility to iron chlorosis is controlled by a single recessive gene. A symbol 'fe' is proposed for the character governing susceptibility to iron chlorosis.

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Gowda, C.L.L., and **Smithson, J.B.** 1980. Iron chlorosis in chickpea. International Chickpea Newsletter 3:10.

Inheritance of an upright pedicel mutant characteristic in chickpea

In chickpea, the flower pedicel bends downwards after fertilization and the fruit develops below the leaf canopy. In 1974/75, a natural mutant with upright pedicel was observed in chickpea variety L 550 at ICRISAT Center (Pundir and van der Maesen 1977). This was designated as an upright pedicel mutant (Figure 1). The mutant has a reflexed pedicel so that the fruit remains above the plant canopy during the pod development. This characteristic appears to be of interest if it can increase the photosynthetic activity in the pod wall also.

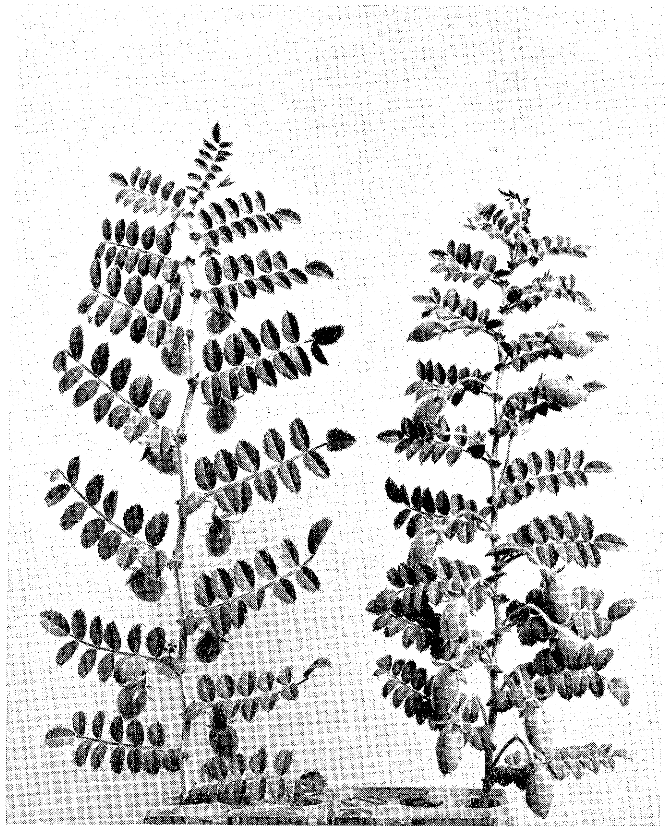

Figure 1. Normal (left) and upright pedicel in chickpea.

In order to study the inheritance of upright pedicel, the mutant was crossed with two normal cultivars, Annigeri and K 850, having normal pedicel. Reciprocal crosses were also made to check if there were any maternal effects. The parents along with their F_1's and F_2's were grown in the field at ICRISAT Center during the 1981/82 postrainy season and were observed for pedicel characteristics. The F_1's were all normal, indicating that the normal pedicel characteristic is dominant and the upright pedicel characteristic is recessive. The F_2 plants segregated into normal and mutant types. The number of plants classified as normal and upright types, and the Chi-square values of goodness of fit to 3:1 ratio are given in Table 1. The segregation in all the crosses, individually and overall, very closely fitted a 3 normal:1 mutant ratio.

Forty F_3 families, derived from F_2 single plants, were planted and observed

Table 1. Numbers of normal and pedicel mutant plants, Chi-square values, and probabilities of goodness of fit to a 3:1 ratio in F_2s of crosses involving pedicel mutant L 550-PM.

Cross	No. of plants: Normal	No. of plants: Pedicel mutant	X^2	P
K 850 x L 550-PM	130	38	0.51	0.30 - 0.50
L 550-PM x K 850	135	40	0.43	0.50 - 0.70
Annigeri x L 550-PM	177	50	1.07	0.30 - 0.50
L 550-PM x Annigeri	46	19	0.62	0.30 - 0.50
Total	488	147	1.16	0.20 - 0.30
Heterogeneity			6.82	0.50 - 0.10

during the next season. The F_3 progenies from F_2 plants with upright pedicel bred true. The remaining progenies were classified into nonsegregating normal plants, segregating normal types, and segregating mutant types. The segregation of F_3 families fitted a ratio 1 normal:2 segregating:1 mutant type. The segregation pattern in both F_2 and F_3 generations indicates that the upright pedicel characteristic is controlled by a single recessive gene; and that there are no maternal effects or reciprocal differences.

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Pundir, R.P.S., and van der Maesen, L.J.G. 1977. A pedicel mutant in chickpea (Cicer arietinum L.). Tropical Grain Legume Bulletin 10:26.

Effectiveness of yield components as selection criteria in the F_2 and F_3 for improving seed yield in chickpea

Improvement of complex characteristics such as yield may be accomplished through component breeding (Grafius 1964). This method, in general, assumes strong associations of yield with a number of component characteristics and simpler inheritance of these yield components than that of yield itself. Despite the conclusive evidence in several crops showing an association between component characteristcs and yield, and showing the usefulness of the component approach to breeding, component traits have not been used extensively as selection criteria by plant breeders for improving yield. In the present report, the effectiveness of selection for component characteristics such as fruiting branches, effective pods plant^{-1} and seed index, in the F_2 and F_3 generations to improve seed yield in chickpea is discussed.

The two crosses, K 468 x L 144 (Cross 1) and C 235 x L 144 (Cross 2), used in the present work involved desi and kabuli parents. In both crosses, the F_2 was grown in the winter of 1981/82 and individual plants were selected at maturity randomly, visually and for fruiting branches, effective pods plant^{-1}, and seed index (100 seed mass). The selected F_2 plants were advanced to the F_4 generation. In another trial, F_3 lines were raised in the winter of 1982/83. The component traits, fruiting branches, effective pods, and seed index along with yield *per se* were used as bases for selecting F_3 progeny rows. In both trials, 10 F_4 lines per selection