# Genetic enhancement in groundnut

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From 1600 ha grown in 1850-51, the groundnut crop in India now covers 8.26 m ha with a total production of 7 MT. Thus India is the largest producer of the crop in the world (29.96%) but low productivity of the crop (847 kg $ha^{-1}$) remains a challenge to the groundnut scientists in the country.

In the crop improvement history of groundnut, two years, 1905 and 1961, represent important landmarks. Groundnut cultivar *spanish* Improved, a pure line selection from *spanish* peanut made at Dharwad, was released in 1905 for cultivation in the bunch tract of Bombay-Karnataka region. This was the first official release of groundnut in India. In 1961, C 501, a *virginia* bunch cultivar derived from a cross between D 3 and Ah 477 at Ludhiana, was released for cultivation in Punjab state. This was the first groundnut cultivar in India derived through hybridization.

Between 1906-1960, 12 cultivars were released for cultivation in different parts of the country. These cultivars were developed either by pure line or mass selection in local/introduced varieties. Prominent among these were Ak 12-24 and TMV 2 (both *spanish* and released in 1940). Karad 4-11 (*virginia* runner, released in 1957), and T 28 (*virginia* runner, released in 1960). During 1961-79, 28 more cultivars were released. Of these, 11 originated from hybridization and 17 were mass/pure line selection.

Groundnut breeding in India received a real impetus in 1980s when 30 new cultivars were released. These new cultivars included 20 spanish, seven *virginia* bunch, and three *virginia* runner types. Contrary to previous decades where heavy reliance in varietal development was placed on mass/pure line selection in local/introduced material, in the 80's, 80% of the new cultivars were cross derivatives. This decade also saw a shift in breeding objectives when greater emphasis was laid on stress resistance breeding. Three foliar diseases resistant cultivars (Girnar 1,

ICGS(FDRS) 10, and ICGV 86590) were released during this period. Similarly cultivars like ICGS 11, ICGS 37 and ICGS 44, were specifically released for postrainy season cultivation in different parts of the country.

Till the end of 1992, 72 cultivars have been released in India giving a wide array of choice to farmers. As compared to the 70s, the area, production and productivity of groundnut in the 80s increased by 3.4%, 13.8% and 9.31% respectively. However, the gain in productivity at farm level does not truly reflect the genetic gains which have been made experimentally. The main reason for this situation is the non-availability of adequate quantity of good quality seed of improved cultivars to farmers. Old cultivars like TMV 2, J 11, JL 24 and Ak 12-24 still continue to dominate at farm level in India. To realize the full impact of genetic improvement made so far on groundnut production in India, it is imperative that a strong seed production programme is established to ensure the wide coverage by improved cultivars at the farm level. To achieve this, even if temporary reduction in scale of research work is required, it will be a sacrifice worth made.

The current groundnut breeding activities in India concentrate on developing varieties with following characteristics: high yield, high oil content, early-maturity and confectionery traits, tolerance/resistance to drought, low temperature, iron chlorosis, foliar diseases and aflatoxin production. Although such resistant cultivars will help to sustain groundnut production, the rate of increase in productivity, which is already low, is likely to go down further. The experience in the United States shows that when the emphasis in breeding was placed on resistance to pest and quality acceptance in the 70's, the new groundnut cultivars released in the 80s, although superior in pest resistance and quality characters, did not surpass the yield of the highest yielding cultivar of the 70s. It is, therefore, important that breeding for high yield *per se* should continue to receive strong emphasis so that resultant material with high yield potential could form the base for stress resistance breeding programme.

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