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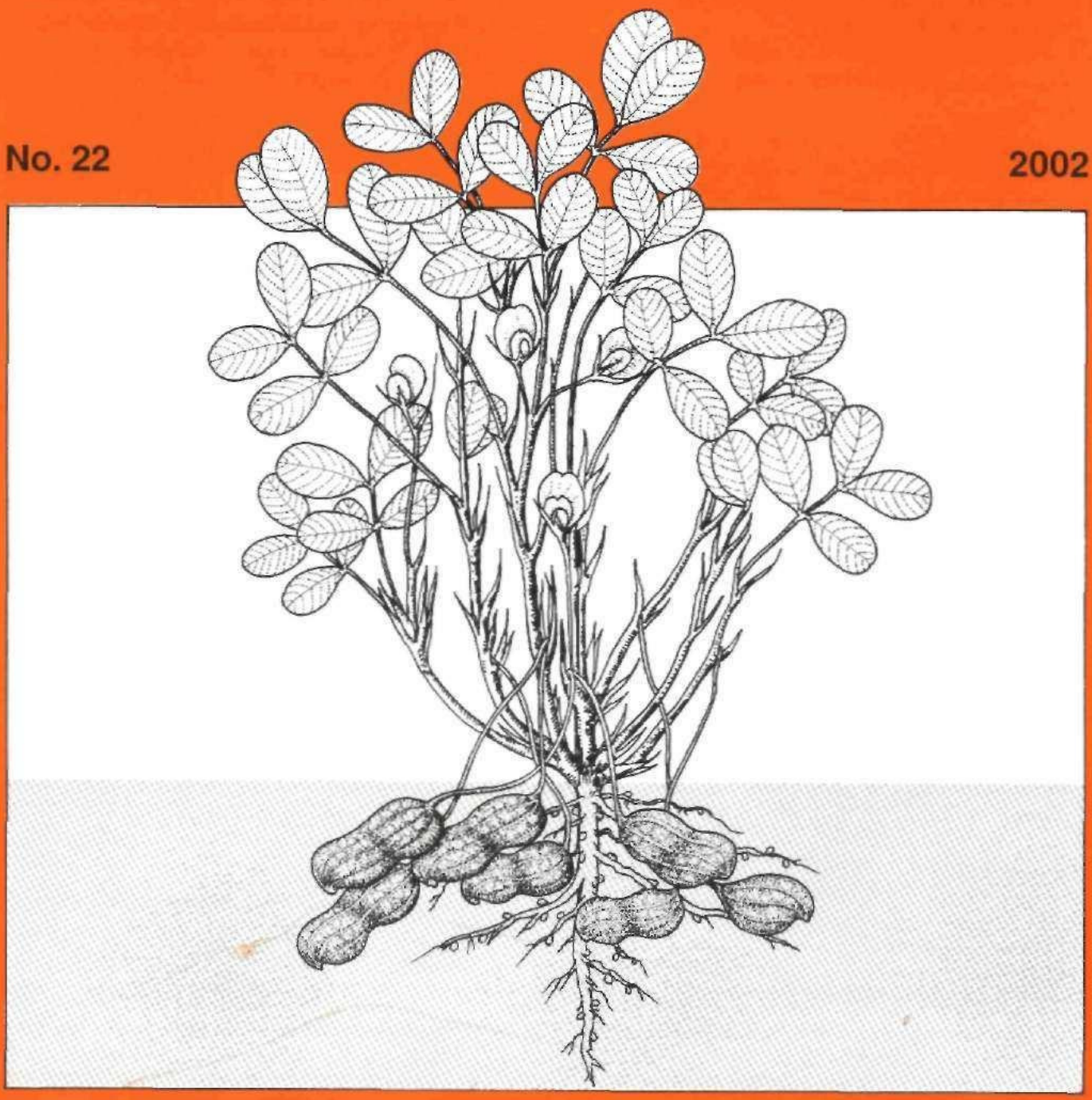

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About Peanut CRSP

The Peanut Collaborative Research Support Program is an international program supported by USA1D Grant LAG-G-00-96-00013-00 to The University of Georgia. The research supported seeks environmentally sound, sustainable agriculture production and food delivery systems for peanut. The program has five thrusts addressing priority constraints to the global peanut industry (aflatoxin, production efficiency, socioeconomic forces, postharvest processing, and utilization). Peanut CRSP also works to foster human resource development and the communication of research results.

The Peanut CRSP provides support for collaborative research, training, and exchange of information through grants to 12 universities in USA linked to 15 host countries in the developing world. Both host countries and USA are expected to benefit from the activities of Peanut CRSP. Peanut CRSP actively collaborates with other organizations with interest in advancing development through the application of science and technology.

About ICRISAT

The semi-arid tropics (SAT) encompasses parts of 48 developing countries including most of India, parts of southeast Asia, a swathe across sub-Saharan Africa, much of southern and eastern Africa, and parts of Latin America. Many of these countries are among the poorest in the world. Approximately one-sixth of the world's population lives in the SAT, which is typified by unpredictable weather, limited and erratic rainfall, and nutrient-poor soils.

ICRISAT's mandate crops are sorghum, pearl millet, chickpea, pigeonpea, and groundnut - five crops vital to life for the ever-increasing populations of the SAT. ICRISAT's mission is to conduct research that can lead to enhanced sustainable production of these crops and to improved management of the limited natural resources of the SAT. ICRISAT communicates information on technologies as they are developed through workshops, networks, training, library services; and publishing.

ICRISAT was established in 1972. It is supported by the Consultative Group on International Agricultural Research (CGIAR), an informal association of approximately 50 public and private sector donors. It is co-sponsored by the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP) and the World Bank. ICRISAT is one of 16 nonprofit CG1AR-supported Future Harvest Centers.

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Aneuploids in Groundnut

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Interspecific hybridization was attempted between cultivated tetraploid groundnut *(Arachis hypogaea)* cultivar J 11 under section *Arachis* as female parent and wild perennial diploid species, *Arachis paraguariensis* under section *Erectoides* as pollen parent under field conditions during rainy season. A total of ninety-two probable cross pods from the above cross were collected and seeds were grown in the field for identification of hybrid plants. But none of the plants were found to be hybrids. However, one plant was morphologically like the female parent but poor in vigor. Meiotic chromosome analysis in pollen mother cell (PMC) confirmed that the plant with poor vigor and 19 bivalents was a nullisomic, the 2n chromosome number of groundnut being 40. The nullisomic plant had narrow leaflets and blooming was delayed by nearly two hours; about 95-98% fertile (stainable) pollen was produced which germinated normally in aqueous medium standardized for groundnut.

Meiotic analysis revealed that pairing behavior at Metaphase I in the nullisomic plant was normal. The PMC having 19 bivalents constituted the modal class. Univalents and trivalents in the PMCs were rare. The mean chromosome configuration per PMC at Metaphase I was 0.63 univalents and 18.54 bivalents. Similar pairing of chromosomes in nullisomic was reported earlier by Singh et al. (1981) in groundnut. Equal distribution of chromosome 19/19 in Anaphase I was observed in about 50% PMCs. Rest of the PMCs showed unequal separation of 20/18 or 21/17. The occurrence of nullisomy and univalents in PMC suggest that groundnut is amenable for producing an aneuploid series.

Table 1. Phenotypic comparison between groundnut cultivar J 11 (female parent) and the nullisomic plant.

Plant characters	111	Nullisomic plant
Leaflet area (cm^2)	9.22	4.30
Leaflet length (cm)	4.65	3.99
Leaflet width (cm)	2.52	1.68
Petiole length (cm)	3.24	2.30
Stipule length (cm)	2.40	2.03
Sepal length (joined) (cm)	8.00	8.46
Sepal length (single) (cm)	10.00	10.13
Hypanthium length (cm)	27.33	15.54
Stomatal length (mm)	0.02	0.02
Stomatal width (mm)	0.02	0.01
Petal length (mm)	13.60	11.26
Standard length (mm)	8.00	7.73
Wing length (mm)	8.80	8.00
Pollen size (mm)	0.06	0.07
Anther length (mm)	13.02	11.26

The mode of origin of nullisomy in interspecific crosses is not understood fully. The species used as pollen parent had a different genome (E1) which is cross incompatible with other species. At maturity, the nullisomic plant produced a total of eleven mature pods of which only four progeny plants were raised successfully. Of the four plants, two were confirmed as nullisomic having 2n chromosome number of 38. Some phenotypic differences were observed between J 11 and the nullisomic plant (Table 1).

Reference

Singh D, and Joshi BC. 1981. Aneuploids in groundnut. Indian Journal of Genetics 41:161-163.