Reprinted from *Current Science*, April 20, 1987, Vol. 56, No. 8, pp. 368-369

SPANISH GROUNDNUT STRAINS WITH FRESH-SEED DORMANCY

P. S. REDDY, M. S. BASU, S. P. TIWARI, DEVI DAYAL and T. RADHAKRISHNAN
National Research Centre for Groundnut, Junagadh 362 015, India.

DORMANCY of seeds in groundnut (*Arachis hypogaea* L) is not found in Spanish and Valencia groups (subspecies *fastigiata* Waldron) in contrast to Virginia group (subspecies *hypogaea* Krap. et Rig.) where it is generally present. Lack of dormancy in the Spanish (bunch) group is a problem causing *in situ* germination and poor storability of seeds in pods. Although some Spanish cultigens were reported to possess a degree of fresh-seed dormancy[1,2], these have not been released for general cultivation so far except the variety TG-17 which was reported to possess a short dormancy of about 15 days[3]. A major breakthrough in this aspect was the development of a Spanish cultigen, CGS 1–19 (derived from a cross between Spanish J-11 and Virginia bunch Robut 33–1) which possesses a fresh-seed dormancy period of five weeks[4]. This cultigen has a good yield potential and is already entered in the All India Coordinated Trials as CGC-7. The present report concerns further gain in dormancy period of CGC-7 to a level hitherto not reported in Spanish groundnut.

The progeny in F_8 generation of the selection CGC-7 was planted for pre-release seed multiplication during the summer of 1984 at NRCG, Junagadh. The population exhibited differential germination. Some seeds germinated belatedly thereby indicating a difference in the period of dormancy. The late-germinating and normal plants were harvested and bulked separately. To break the dormancy, the seeds were sprayed with ethrel (2-chloroethylphosphonic acid) solution (500 ppm), sealed in polythene bags to avoid escape of ethylene gas and kept overnight. After a thorough washing, the seeds were sown in the field during the rainy season of 1985. Both the bulks were harvested during the second week of November 1985 and subsequently planted separately on 27 June 1986.

The normal bulk exhibited uniform and complete germination within 10 days after planting. In the selected bulk, however, the germination was staggered resulting in four categories of seedlings (table 1). In category A, the population germinated normally similar to that in the unselected bulk showing moderate dormancy. In categories B, C and D, the germination was progressively delayed by about a fortnight from one category to the immediate next one. The dormancy in the latter three categories was, thus, longer than the normal bulk and ranged from 240 to as high as 285 days which is unique and so far not reported in the Spanish groundnut.

Isolation of these highly dormant Spanish strains clearly shows that the magnitude of fresh seed dormancy can be manipulated through selection in the population and the scope exists to breed a Spanish bunch variety with a desired level of dormancy. Evolution of these strains amply flays the fallacy of non-availability of seed-dormancy in Spanish groundnut.

17 September 1986; Revised 14 November 1986

1. Ramachandran, M., Loganathan, N. S., Sridharan, G. S., Chandrasekharan, N. R. and Krishnaswamy, P., *Indian J. Agric. Sci.*, 1967, **37**, 429.
2. Varisai Mohammad, S., Ramachandran, N. and

Table 1 *Differential fresh-seed dormancy in sister-strains of CGC-7 groundnut*

Category of sister strain	No. of segregants selected	% of population selected	Days after sowing taken for emergence*	Dormancy (days)
CGC-7 A	565	21.6	10	<230
CGC-7 B	605	23.1	25	245
CGC-7 C	607	23.2	40	270
CGC-7 D	842	32.1	55	285
		Mean	32.5	257.5
		S.E.	9·7	12·3

* Sowings were effected after a seed-storage duration of 230 days.

Ramachandran, T., *Madras Agric. J.*, 1970, **56,** 234.

3. Patil, S. H., *Indian Farming*, 1977, **26,** 19.

4. Reddy, P. S., Zade, V. R. and Deshmukh, S. N., *J. Oilseeds Res.*, 1985, **2,** 103.