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Short Communication

Dwarf mutant in jojoba (*Simmondsia chinensis*)

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Jojoba (*Simmondsia chinensis*) is a dioecious, perennial and evergreen shrub reaching to the height of 10-12 feet. The seeds contain 50-55% of oil which is non triglyceride and of immense industrial importance. The work carried out on introduction, cultivation and domestication has led to establishment of a number of trial plantations on variety of soils in Gujarat and several other states in the country [1]. In the present study few abnormal plants were identified in the mother plantation as well as in nursery at our experimental plot on coastal sand dunes at Zanjmer (Bhavnagar 21°47 N 72° 09 E. Gujarat).

Plant being dioecious in nature, showed tremendous variability in the populations [2, 3]. Various morphological characters of these plants are compared with the normal plants (Table 1). The height of normal plant ranged

Table 1. Comparison of morphological and yield characters of Jojoba mutant with normal plants

Characters	Normal	Mutant
1. Plant height (in mts)	1.54-2.90 (1.60)*	0.80-1.10 (9.32)
2. Spread (in mts)	7.66-35.61 (8.80)	1.20-2.85 (1.90)
3. Internode length (in cms.)	1.87-3.33 (2.61)	0.80-2.00 (1.56)
4. Leaf length (in cms.)	1.70-3.00 (2.31)	1.15-2.10 (1.45)
5. Leaf width (in cms.)	1.15-2.10(1.45)	0.70-1.10 (0.89)
6. No. of male flowers/bunch	8-11 (10.07)	4-8 (5.67)
7 Seed yield (in gms.)	348.30-794.90 (621.92)	15.27-79.41 (65.43)
8. 100 seed weight (in gms.)	38.35-103.71 (71.08)	14.00-67.87 (55.00)
9. DNA content µg/gm.	119.44-164.50 (138.25)	64.76-68.09 (66.06)
10. RNA content µg/gm	834.75-912.09 (878.44)	1716.57-1932.63 (1894.31)

*Figures in parenthesis are mean values of at least 10 values

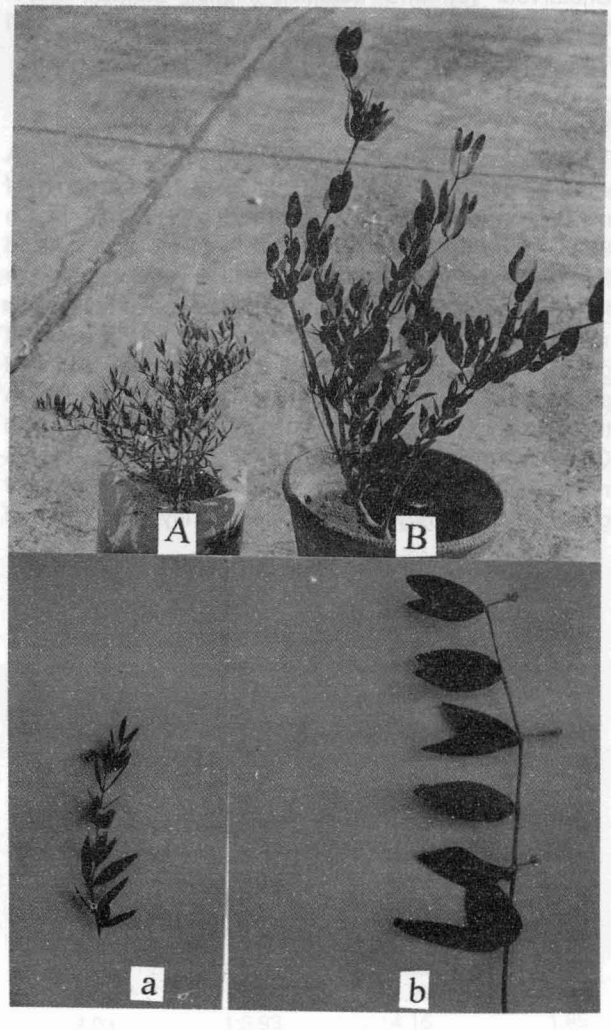

Fig. 1. Mutant (A) and normal plant (B) of jojoba and twigs with flowers (a&b)

from 1.50-3.0 m, mutant ranged only approx. 0.75 whereas 1.20 m. Significant differences were recorded in the size of internode, length and breadth of leaves of mutant and normal plants. The mutant has been with small leaves of oval to long or lanceolate type (Fig. 1A, a). The total DNA and RNA contents of mutant plants was found to be almost one third of the normal plants.

Though, the number of chromosomes is same in both the types (2n = 52) the variation in DNA content was due to differences in the size of the chromosomes as reported in several other plants [4]. Flowers of this mutant are quite smaller in size as compared to the normal plants (Fig. 1B, b) The frequency of these plants in the population recorded to be approx. 0.001-0.002%. Mutants of spontaneous origin were also reported in pea [5], sawa [6] and cotton [7]. The seeds gave rise to the true type plants in the next generation. The plant is being multiplied through micropropagation as it will be useful to raise high density plantations on marginal lands or as a hedge plant alongwith existing other oil seed crops. This type of spontaneous mutants are rare in nature and can be exploited in conventional breeding programmes to assess the mode of inheritance of various characters in the existing germplasm of Jojoba.

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