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Table: Characters of the control and a high yielding dwarf mutant of yam bean

	Length of main vine (cm)	Weight of tuber (g)	Starch %	Sugar %	Protein (dry weight basis) %	Rotenone* content of pods (%)
Control	85.15	157.50	8.74	3.74	4.13	0.25
Mutant	20.55	367.60	8.74	3.30	5.31	0.25

* a natural insecticide.

The mutant bred true and the potentialities were evaluated in M₃ - M₅. In M₅ generation the mutant showed an average yield of 351 g per tuber.

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Alkaline azide mutagenicity in cowpea

Sodium azide is known as a potent mutagen in cereals and legumes [1]. It is very effective in acidic medium in barley [2, 3]. Here an attempt is made to measure the effectiveness of sodium azide in alkaline medium (pH 7.4) on cowpea (*Vigna unguiculata* (L.) Walp., variety FS-68).

Seeds pre-soaked in distilled water for 5 hours were treated with different concentrations (10^{-6} , 10^{-5} , 10^{-4} and 10^{-3} M) of sodium azide (NaN₃) for 4 hours at $28 \pm 2^\circ\text{C}$. Bottles were intermittently shaken, then the seeds were thoroughly washed in running tap water and subsequently planted in pots.

The treatment caused significant biological damage (Table 1) such as reduction in seed germination, length of root and shoot, number of nodules and pods per plant and morphological leaf variations. Morphological, as well as chlorophyll mutants, were detected in M₂. The important features of the mutants are as follows:

Table 1: M₁ effects of alkaline sodium azide treatment

Concentration (molar)	Germination %	Root length	Shoot length	Nodules/ plant % reduction	Pods/ plant	Branches/ plant
Control	95	0.00	0.00	0.00	0.00	0.00
Buffer only	90	2.46	1.75	11.11	0.00	0.00
10 ⁻⁶	85	3.37	3.45	14.81	5.88	11.76
10 ⁻⁵	75	7.82	6.55	22.22	23.53	17.65
10 ⁻⁴	50	8.51	10.04	33.33	29.41	17.65
10 ⁻³	45	8.81	18.34	33.33	41.18	23.53



- (a) Reduced internodal length: Plants showed a 27% to 39% reduction in the internodal length as compared to control.
- (b) Fasciated stem: Fasciation in the lower part of the stem led to a change in the orientation of cotyledonary leaves.
- (c) Delayed flowering: Formation of flowers delayed for 12 to 15 days compared with control. Other characters liked normal plants.
- (d) High yield: Increased number of flowers (38.8%), pods (25%), and seeds (50%) over the original variety. The mutant also showed more vegetative growth.
- (e) High nodulating: Increased number of nodules and lateral roots. Dry biomass 2.7 g compared with 2.0 g of normal plants.

All the mutants described bred true in M_3 . Sodium azide in alkaline medium (pH 7.4) was found to be quite effective in inducing mutations in cowpea.

Table 2: Frequency of mutations in M_2 population of Vigna unguiculata L.

Concentration (molar)	Reduced internodal length	Fasciated stem	Delayed flowering	High yield	High nodulating	Chlorophyll change
Control	-	-	-	-	-	-
10^{-6}	2.88	-	-	-	-	5.76
10^{-5}	2.59	1.29	-	1.29	1.29	2.59
10^{-4}	1.05	-	1.05	-	-	2.10
10^{-3}	-	2.17	-	-	-	4.34

REFERENCES

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Gamma-ray-induced bold seeded early maturing groundnut selections

"Chico" is an early maturing (85-90 days) erect groundnut (Arachis hypogaea L.) genotype utilised in groundnut improvement to incorporate earliness in high yielding varieties. Though it has high shelling out-turn, its yield potential is low since it has small seeds [1-3]. Mutation breeding was started with the objective of improving the seed size.

In a preliminary experiment, dry seeds were treated with 20, 30, 40 or 50 kR of gamma rays. The M_1 generation was grown during the post