Table 1 *Effect of optimal concentration of different vitamins when incorporated in MS-medium separately, on growth of normal and gall tissues of Lycopersicon esculentum Mill.*

	Tissue Type					
	Normal Tissue			Gall Tissue		
Vitamin incorporated in the MS-medium	Optimal concentration ($mg\,l^{-1}$)	Fresh weight (g)	Standard deviation (SD)	Optimal concentration ($mg\,l^{-1}$)	Fresh weight (gm)	Standard deviation (SD)
Biotin	0.5	9.1	±0.2	0.5	11.2	±0.2
Calcium pantothenate	2.5	9.3	±0.1	5.0	11.0	±0.2
Choline chloride	2.5	9.9	±0.2	5.0	11.9	±0.2
Cyanocobalamin	0.5	9.2	±0.2	1.0	10.7	±0.2
Folic acid	1.0	10.1	±0.2	2.5	12.6	±0.3
Riboflavin	0.5	9.0	±0.1	0.5	10.9	±0.2

(Values are mean ± SD of 6 replicates)

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A NEW CHROMOSOME NUMBER OF $2n = 33$ FOR *AMARYLLIS BELLADONNA* L.

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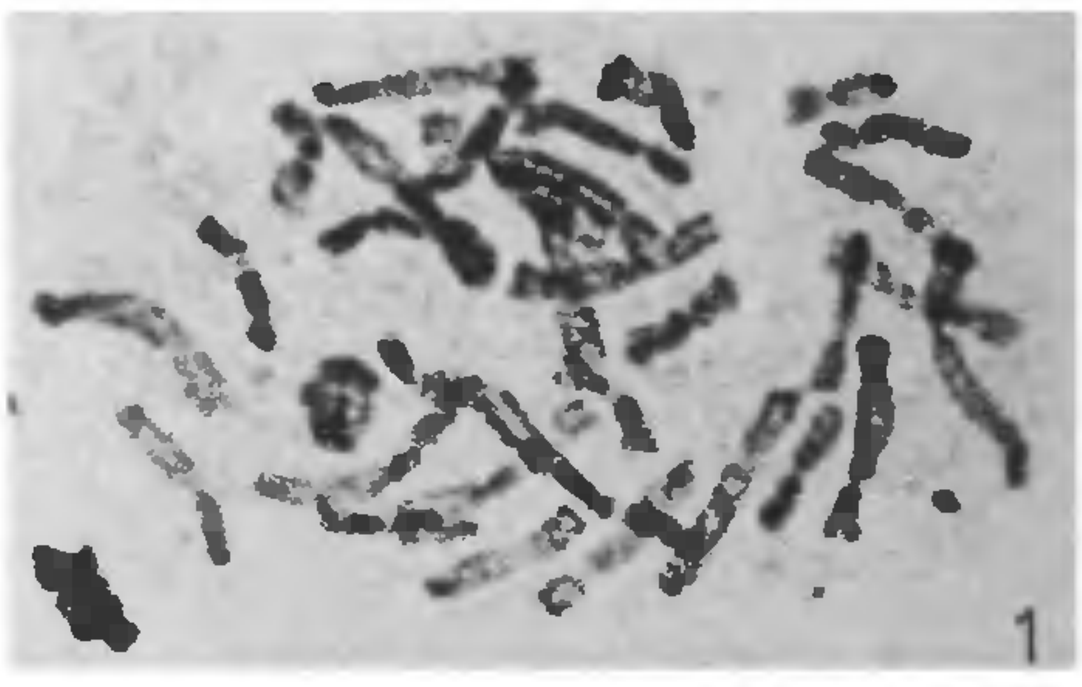
AMARYLLIS BELLADONNA, a horticultural genus of the family Amaryllidaceae is commonly grown in India and other subtropical-tropical areas of the world for its large, colourful and often pleasantly scented flowers. A thorough study of the available literature revealed the record of only two chromosome numbers, $2n = 20, 22$ for the species[1–9]. In the present investigation a new chromosome number of $2n = 33$ is observed in a cultivar obtained from Darjeeling, the karyomorphology of which is described here.



Figures 1, 2. 1. Karyotype of *A. belladonna* with 33 chromosomes × 2680, **2.** Idiogram.

Karyotype studies made following the acetoorcein technique disclosed 33 somatic chromosomes which can be arranged into 11 triplets (figures 1, 2) of which 1, 2, 5, 7, 8, 9, 10 and 11 are heteromorphic and 3, 4 and 6 are homomorphic. In heteromorphic ones, it has been possible to group the chromosomes into pairs and singles indicating hybrid origin from tetraploid and diploid ancestors. In general there are 25 long and 8 medium chromosomes ranging from 5.59 to 15.18 μm with a total chromatin length of 329.38 μm. The karyotype is asymmetrical with 8 median, 6 submedian and 19 subterminal chromosomes. Triplets 1 and 7 possess secondary constrictions on their long arms.

A. belladonna was investigated earlier[1-9] and all the investigators reported $2n = 22$ chromosomes except Fernandes who observed the number $2n = 20$. The present report of $2n = 33$ chromosomes is a new number for the species. The karyotypic data suggest that this taxon is an allotriploid, the origin of which can be traced to a cross between a diploid and a tetraploid. Comparative morphological data on diploid and triploid *A. belladonna* plants reveal that triploidy results in bigger bulbs (7.9 cm, 12.5 cm), larger leaves (L/B 10.5/0.8 cm, 15.31/1.44 cm) and greater height (17.4 cm, 25.8 cm) but smaller stomata (L/B 38.25/12.57 μm, 30.61/10.71 μm).

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NITROGEN FIXATION (C_2H_2 REDUCTION) IN THE RICE RHIZOSPHERE SOIL AS INFLUENCED BY PESTICIDES AND FERTILIZER NITROGEN

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USE of pesticides and fertilizer nitrogen has become an integral part of crop production. These agrochemicals exert profound influence on certain important biological transformations[1-4] of which nitrogen fixation is of topical interest[1, 2, 5]. Several reports indicate the stimulatory and inhibitory effects of commonly used pesticides on biological nitrogen fixation[1-4, 6, 7]. It has been established that high levels of mineral nitrogen inhibit the soil nitrogenase activity in paddy soils[8]. It is a common practice to apply mineral fertilizers and pesticides together in rice culture to achieve higher yields. We report the effects of three pesticides on the rice rhizosphere soil nitrogenase with and without mineral fertilizers.

A greenhouse study to evaluate the relative effects of three commonly used pesticides [carbofuran, (2,3 dihydro-2,2-dimethyl-7-benzofuranyl N-methyl carbamate); prophos, (0, ethyl SS-diprophyl phosphorodithioate) and metham sodium (sodium N-methyl dithiocarbamate)] having both insecticidal and nematicidal properties with and without nitrogen fertilizer on the rhizosphere soil nitrogenase was conducted during 1983. Carbofuran and prophos were applied at 2 kg a.i./ha and metham sodium at 500 l/ha as soil drench to the 5 kg soil in pots. Fertilizer nitrogen as urea at the rate of 60 kg N/ha equivalent as a basal dressing was applied at the time of transplanting. All treatments including control were replicated thrice. Rhizosphere soil (2 g fresh weight) was collected from three plants from each pot (3 pots for each treatment) and transferred to 125 × 16 mm B–D vacutainer tubes for C_2H_2 reduction analysis. The incubation and nitrogenase analysis were conducted as per the details described earlier[6, 7] on a gas chromatograph fitted with hydrogen flame ionization detector.

Nitrogenase activity varied throughout the growing period, indicating the influence of the plant growth phase. Ample evidences exist to show that rice plant influences the rhizosphere soil nitrogenase activity[5, 6]. Soil application of the three insecticides stimulated the nitrogenase activity. Prophos effected the highest stimulation almost throughout the growing season (table 1).