

Table 1 Effect of various concentrations of Sevin on growth and metabolic parameters of mungbean seedlings. Each datum is the mean of 4 replicates (Seedling age: 72 hr)

Parameters	Sevin (ppm)				CD ($P < 0.05$)
	Water control	100	200	300	
Root length (cm)	4.1	5.0	6.3*	6.1*	1.0
Shoot length (cm)	10.5	13.0*	12.4*	10.7	1.4
Amylase (mg maltose released/g f. wt.)	0.61	0.73*	0.85*	0.57	0.08
Protease (increase in OD/g f. wt.)	0.22	0.24	0.27*	0.28*	0.04
RNase (increase in OD/g f. wt.)	1.05	1.31*	1.78*	1.02	0.22
DNA ($\mu\text{g/g}$ f. wt.)	0.68	1.13*	1.12*	1.02*	0.17
RNA ($\mu\text{g/g}$ f. wt.)	3.1	4.5*	5.4*	8.6*	0.7
Alkali soluble protein (mg/g f. wt.)	4.5	5.5	8.4*	4.7	1.2

* denotes significance at 5% level.

tivities of hydrolyzing enzymes, viz amylase, protease and RNase of cotyledons together with DNA, RNA and protein contents of mungbean seedlings.

Mungbean (*Vigna radiata* L Wilczek) seeds were germinated in 100, 200 and 300 ppm aqueous solutions of Sevin in dark, humid atmosphere at 26°C. Seeds germinating in water were taken as control. Activities of amylase⁴, protease⁵ and RNase⁶ enzymes and the levels of nucleic acids⁷ and proteins⁸ were measured. Seedling elongation measurement and biochemical analysis were carried out with 3-day old seedlings.

Seedlings measured longer in Sevin treatments as compared to control (table 1). The relative root elongation was greater than that of shoot growth. Sevin stimulated the activities of amylase, protease and RNase of mungbean cotyledons. Nucleic acids and protein contents were also increased by Sevin treatments. During seed germination, the seedlings depend on the storage tissue for the reserve foods to be used for germination and growth through the action of hydrolyzing enzymes⁹. Growth-promoting action of Sevin was found to be mediated through increased activities of hydrolases. Similarly, enhanced levels of nucleic acid and proteins under Sevin treatments could be correlated with growth promotion of seedlings.

It appears from the present work that Sevin can be used at a concentration of 100–200 ppm with no detrimental effects. In addition to its conventional use in pest control, the possibility of growth promotion offers a distinct advantage.

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A NOTE ON ORIGIN AND CYTOLOGY OF A HEPTAPLOID PLANT OF *SOLANUM* SECTION *SOLANUM*

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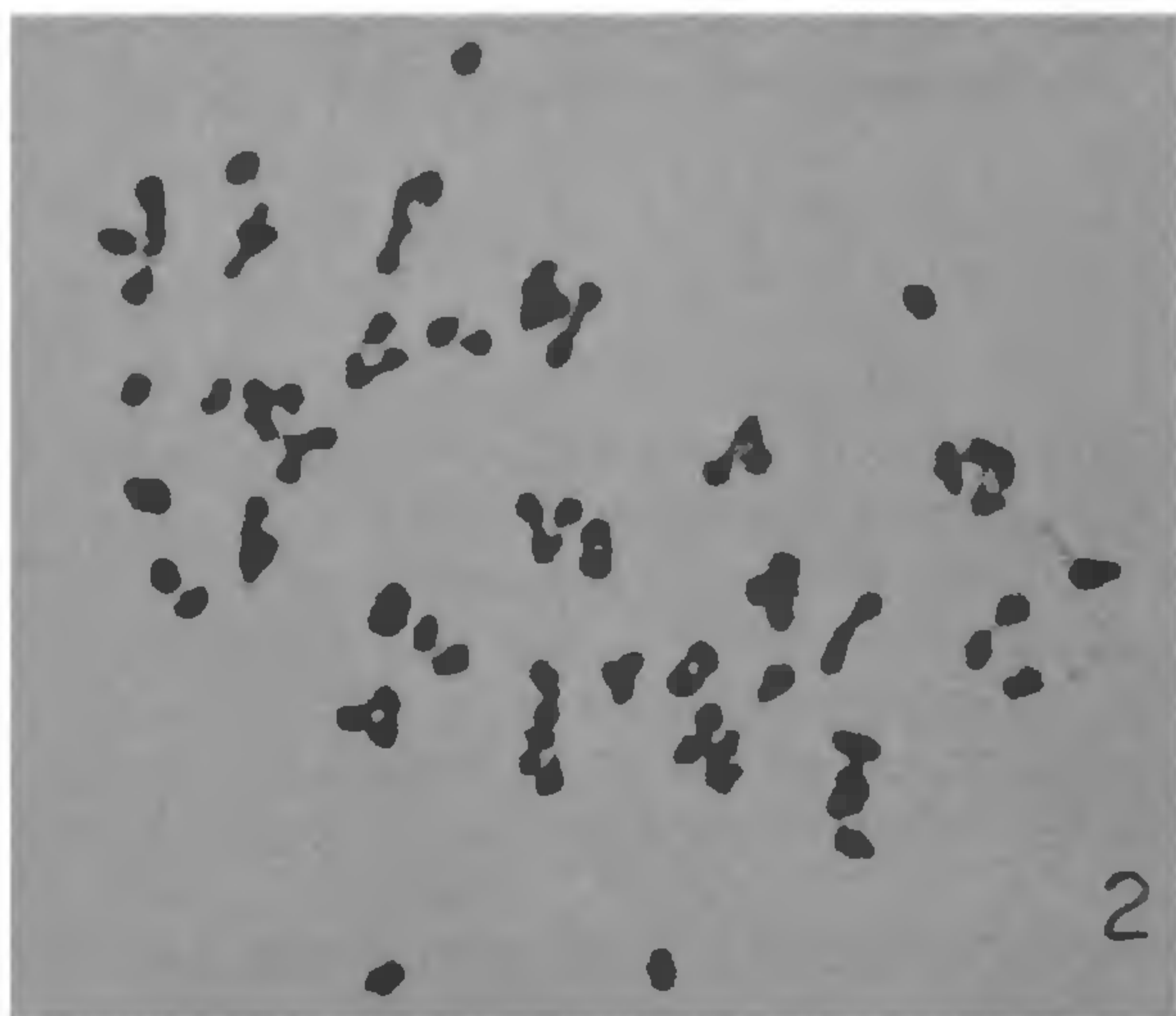
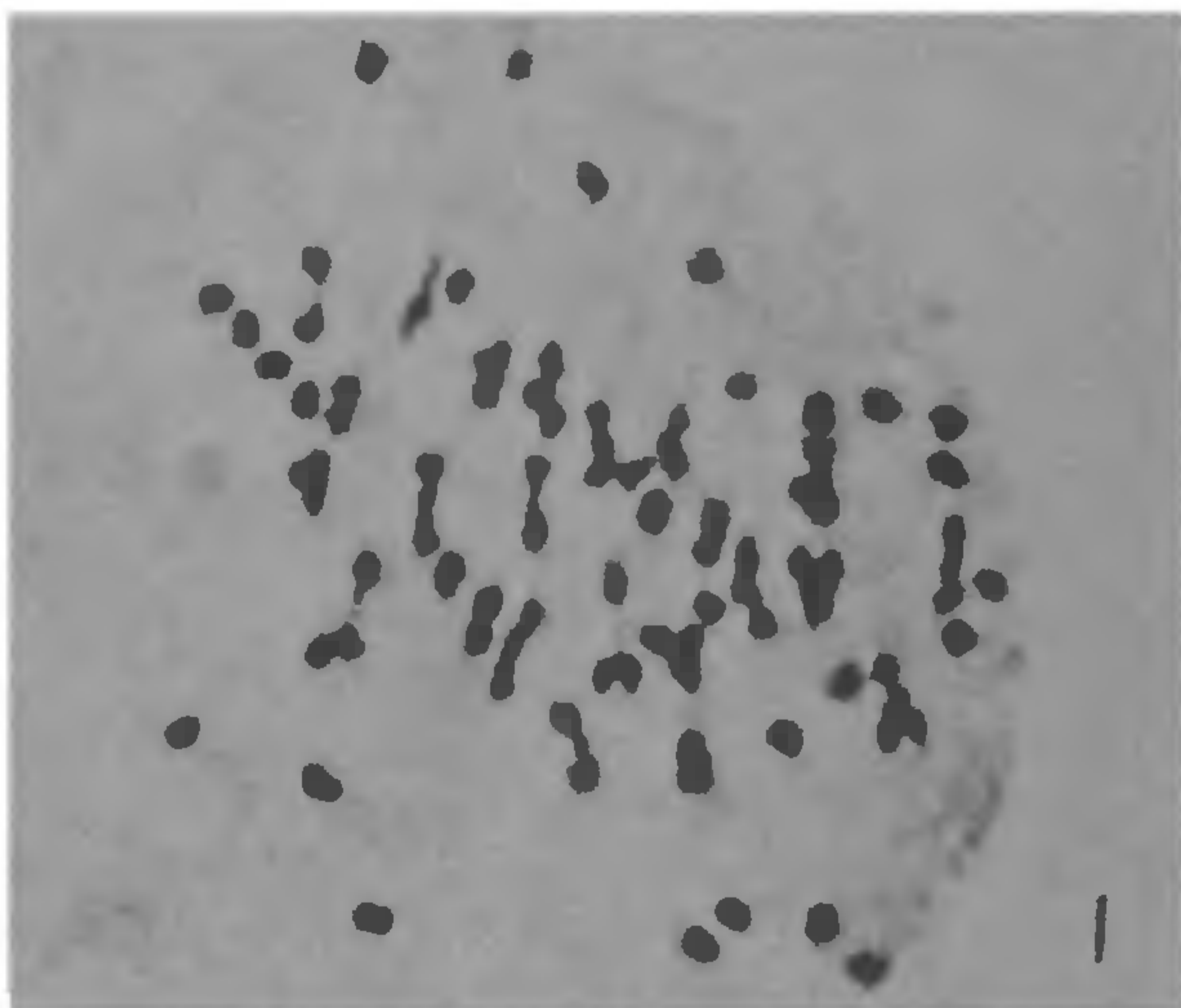
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THERE are conflicting reports regarding the nature of polyploidy in the *Solanum* section *Solanum*¹. The present note reports the functioning of 2n gamete in this group providing a clue towards understanding the nature of polyploidy.

While crossing *S. nigrum* L. ($2n = 6x = 72$) and

S. villosum Mill ($2n = 4x = 48$), a sterile heptaploid hybrid ($2n = 7x = 84$) was obtained. Generally in hexaploid and tetraploid cross, a pentaploid hybrid with $2n = 60$ chromosome is expected. The occurrence of heptaploid hybrid indicates the sexual functioning of cytologically non-reduced gametes. The crosses were successful only when *S. nigrum* was used as the female parent. It is believed that heptaploidy originated from an embryo resulting in fertilization of reduced egg cell of *S. nigrum* by non-reduced male gamete of *S. villosum*.

The parental species exhibited regular meiosis with 36 and 24 bivalents, respectively. The hybrid was sterile



Figures 1, 2. Meiosis in heptaploid hybrid. 1. Metaphase I showing $27_I + 15_{II} + 9_{III}$; 2. Metaphase I showing $12_I + 12_{II} + 12_{III} + 3_{IV}$.

and showed highly irregular meiosis (figures 1, 2). Anaphase I and the subsequent stages were irregular and characterized by laggards, chromatin bridges and unequal distribution of chromosomes at poles. In the hybrid, at metaphase I, the mean pairing of chromosomes, per cell, was $19.72(12-28)_I + 12.48(19-16)_{II} + 12.80(6-18)_{III} + 0.56(0-2)_{IV} + 0.08(0-1)_{V}$; the range of values is given in parentheses. Occurrence of as many as 18 trivalents indicates the structural homology of the parental chromosomes. This may mean that *S. villosum* participated in the ancestry of *S. nigrum* or both have been derived from a common ancestor².

Failure of chromosome reduction in the first meiotic division or failure of cytokinesis during the second meiotic division leads to the formation of non-reduced gametes³. If $2n$ gamete played a prominent role in evolution of higher polyploids in the section *Solanum*, it is likely that considerable proportions of the polyploids at higher level believed to be allopolyploids are actually autopolyploid. Then, the diploid-like meiotic behaviour of polyploids may be caused by a special genetically controlled mechanism as in *Phleum*⁴.

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TAXONOMIC STATUS OF *FLACOURTIA RAMONTCHI* L HERIT

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FLACOURTIA RAMONTCHI L Herit and *F. sepiaria* Roxb were united under *F. indica* (Burm f) Merr, by Merrill¹. Both *F. ramontchi* and *F. sepiaria* possess thorns. According to earlier reports³⁻⁴ the thorns do not bear flowers and fruits in *F. ramontchi* while they usually bear flowers and fruits in *F. sepiaria*.