

Vijai Shanker Jaiswal (1945–2007)

Professor V. S. Jaiswal was killed in a road accident in Varanasi on 26 March 2007 at the peak of his professional life. I recall with deep anguish my treasured association with him over the last four decades. His sudden death has caused a void in the botanical circles in India. Banaras Hindu University (BHU), Varanasi has lost a highly dedicated and a most admired member of the faculty.

Born on 14 July 1945 in Jaunpur, Jaiswal had his education up to Bachelor's degree in his home town. He owed his deep interest in botany to his teacher S. N. Gupta. Joining the M Sc programme in Botany at BHU, he lived in a small room and studied under street lights. Through motivation and hard work, Jaiswal secured First Class and First Rank in the M Sc examination (1967) and won the University Gold Medal.

Jaiswal joined me as a research scholar at Delhi and selected regulation of flowering, flower-sex expression and its modification by plant growth regulators (PGRs) in *Cannabis sativa*, a dioecious plant (source of fibre, seed oil and hallucinogenic preparations such as bhang, ganja and charas/marijuana). He worked with devotion and perseverance, visited the library almost everyday and willingly shared the newly acquired information with other fellow scholars.

In *Cannabis*, sex becomes manifested only when flowers appear. The male and female flowers are morphologically quite different. A thorough cytological study indicated the absence of a heteromorphic pair of sex chromosomes. Male flowers (functionally and morphologically identical to natural ones) could be induced in female *Cannabis* plants by the application of gibberellins (GAs) and anti-ethylene agents. Fertile female flowers could be induced in male plants by ethephon (also known as ethrel or 2-chloroethane phosphonic acid) and NIA 10637 (ethyl hydrogen-1-propyl phosphonate). We hypothesized that in *Cannabis*, GA and ethylene act as male and female hormones respectively, and that the expression of sex is controlled by a balance between their endogenous levels. Abscisic acid (ABA) was able to overcome the GA-induced male flower formation.

Jaiswal's Ph D viva-voce examination was conducted in 1973 by the noted botanist J. Heslop-Harrison from UK,

then, a Visiting Professor at Delhi University. The examiner was highly appreciative of Jaiswal's performance in presenting his work and defending it. The experimental results were published in prestigious journals.

Jaiswal worked as a temporary Lecturer in Botany at the University of Delhi for two years (1972–74). He married a fellow researcher at Delhi. The couple participated in science teaching programmes in the summers of 1971–1973 for rural middle schools in Madhya Pradesh, under the Hoshangabad Experiment. The Jaiswals later moved to Varanasi, where Jaiswal was appointed lecturer in Botany at BHU (1974).



Jaiswal set up the first plant tissue culture laboratory at BHU. He started research on the isolation and aseptic cultivation of explants (portions of stem and leaf) from mature trees such as black mulberry (*Morus nigra*), arjun (*Terminalia arjuna*), *Sterculia alata*, peepal (*Ficus religiosa*), neem (*Azadirachta indica*) and soap nut (*Sapindus trifoliatus*). The main aim was to accomplish clonal propagation of high-quality individuals via somatic embryogenesis followed by production of synthetic seeds. Jaiswal considered it worthwhile to isolate and culture *in vitro* the nucellar tissues of mango (*Mangifera indica*) to proliferate somatic embryos. His research group was able to induce somatic embryogenesis even in monoembryonate cultivars such as Langra, Chausa, Amrapali and Malika. All workers in mango tissue culture

have observed that whereas somatic embryogenesis can be induced by manipulating the conditions of culture, their conversion into plantlets is a formidable task and their successful transfer to field conditions in sufficient numbers is even more challenging.

The important outcome of research from Jaiswal's group has been the production of synthetic seeds in mango, guava and arjun; micropropagation protocols for guava, jackfruit, mulberry and jamun, somatic embryogenesis and salt (NaCl)-tolerant plants in soap nut, and androgenic haploid production in *Solanum grandiflorum*. In basic sciences, the study on the uptake and toxic effects of cadmium on *in vitro* growth of fronds of the duckweed, *Spirodela polyrrhiza* and the reversal of toxicity by chelating agents is commendable.

Jaiswal published over 100 technical papers, reviews in refereed journals and invited chapters in books. He has edited two books and has guided 15 doctoral and five post-doctoral scholars. An inspiring teacher, he took classes regularly, constantly updating his knowledge and encouraging students to use the library regularly and search the databases. In recent years he taught physiology, plant biochemistry and environmental microbiology.

Having established academic contacts with leading experts in his field of specialization, Jaiswal availed of the opportunity to work in the laboratory of R. C. Litz, University of Florida, USA, as an Overseas Associate of the Department of Biotechnology, Government of India (1988–89). As a INSA–JSPS Visiting Scientist, he carried out research at the University of Tsukuba, Japan with Hiroshi Harada (1989). He has presented invited papers at several international conferences, and has also served as the Indian National Correspondent for the International Association of Plant Tissue Culture and Biotechnology for the past several years.

An able organizer, Jaiswal was responsible for holding several symposia in Varanasi. He was in constant demand as a speaker, resource person or as a keynote speaker at several national conferences and workshops.

Jaiswal was a member of the Programme Advisory Committee for Plant

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Sciences of the Department of Science and Technology (1995–98), Plant Research Committee of the CSIR (1995–98), and of several committees set up by the UGC. Importantly, he was appointed Convener of the Curriculum Development Committee in Botany by the UGC.

The qualities that contributed to Jaiswal's fulfilment in his academic life were his abundant energy, capacity to

work hard, a deep commitment, perennial curiosity to learn, assimilate and share knowledge freely with others, compassion for students, easy accessibility and trustworthiness. The Jaiswal's doors were open to anyone in need of help or advice.

We shall miss Jaiswal's lively and dynamic presence. But as Jaiswal represented a great continuum of learning initiated by

Mahamana Pandit Madan Mohan Malaviya at BHU, he is not to be mourned. Jaiswal is survived by his wife Prof. Uma Jaiswal and two children.

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