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Honoring Dinesh Chandra Uprety (1945-2023): A Great Teacher, An Outstanding Scientist, and A Wonderful Human Being

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We honor here Dinesh Chandra Uprety (1945-2023), one of the most remarkable plant scientists of India, who devoted most of his life in solving the question of how best to tune the crop plants so that they can serve the growing human population in this world. We have provided here a glimpse of his personal life as well as his remarkable scientific contributions. Also, we provide here reminiscences by a few who had the privilege of knowing him closely. We miss Dinesh Uprety not only for his highly important research for the benefit of us all- but for his friendship to us all. He was a wonderful friend to us, extremely polite and gem of a human being. He was scientist par excellence.

PERSONAL LIFE AND TRAINING

Dinesh Chandra Uprety, son of Madhuri & Deoki Nandan Uprety, was born on September 4, 1945, in Nainital, India. He did his BSc (1962), MSc (1964), and PhD (in Botany, 1971), all from Agra University, Agra, U. P., India. The title of his thesis was "Physiological studies on salt tolerance in two varieties of *Pisum sativum* L." and was under the mentorship of Dr. Mahendra Nath Sarin (Uprety and Sarin, 1975). In addition to Hindi & English, D. C. Uprety had learned German and Russian.

He was married to Kamla Pande on December 14, 1974. They have two children: Pushpendra and Prabha. Sadly for all of us, Pushpendra (1980-2016) is no more.[a]

Figures 1- 3 show some of Dinesh Uprety recent photographs alone and with his family. Figure 1 shows his informal photograph relaxing at his sister's home in Gurugram whereas, Figure 2 shows two other informal photographs, one with his daughter Prabha, and his wife Kamla, and the other where he is enjoying the family album. Figure 3 shows Dinesh with his son Pushpendra and his daughter-in-law Pooja.

Fig. 1: A 2021 portrait of Dinesh Chandra Uprety. Source: Prabha Dhariyal

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Fig. 2: Left: A 2018 photograph of Dinesh C Uprety (middle) with his daughter Prabha (left) and wife Kamla (right). Right: Dinesh Uprety enjoying family album with Kamla at his Delhi home. Source: Archives of Uprety family.

Fig. 3: A 2015 photograph of Dinesh C. Uprety with Kamla Pande Uprety, their daughter-in-law Pooja Uprety, and their son Pushpendra Uprety, at their home in Delhi. Source: Archives of Uprety family.

[a]Vijay Uprety wrote: "Pushpendra Uprety (1980-2016) was affectionately called *Babbu* at home; he was younger to his sister Prabha, and was married, in 2008, to Pooja. He was a tall, strapping young man, and left us at the prime of his youth, ironically due to a cardiac arrest. He was an avid photographer with a penchant for travelling. Further, he was an organisation person to the core; he was the one who always raised his hand to arrange (or coordinate) family functions, of which there were many in our large extended family. His ever-smiling personality, modesty & humility were traits that had been passed on by his father. On the professional side, he had his bachelor's degree in commerce and then his master's in finance and Control, both from Delhi University. Further, his academic journey included a degree in Hotel Management from the Institute of Hotel Management (IHM), in Delhi; his last professional position was to serve as Associate Vice President at Ernst & Young (EY), Delhi."

Before we discuss Dinesh Uprety's academic life, we show two photographs, one with a fellow scientist and the other with one of his former students. Figure 4 shows him with the late Akhouri Hemantranjan (1954-2021) of Banaras Hindu University (BHU) and the other (on the bottom) with one of his former students, Late Bimal K Rabha, of Assam.

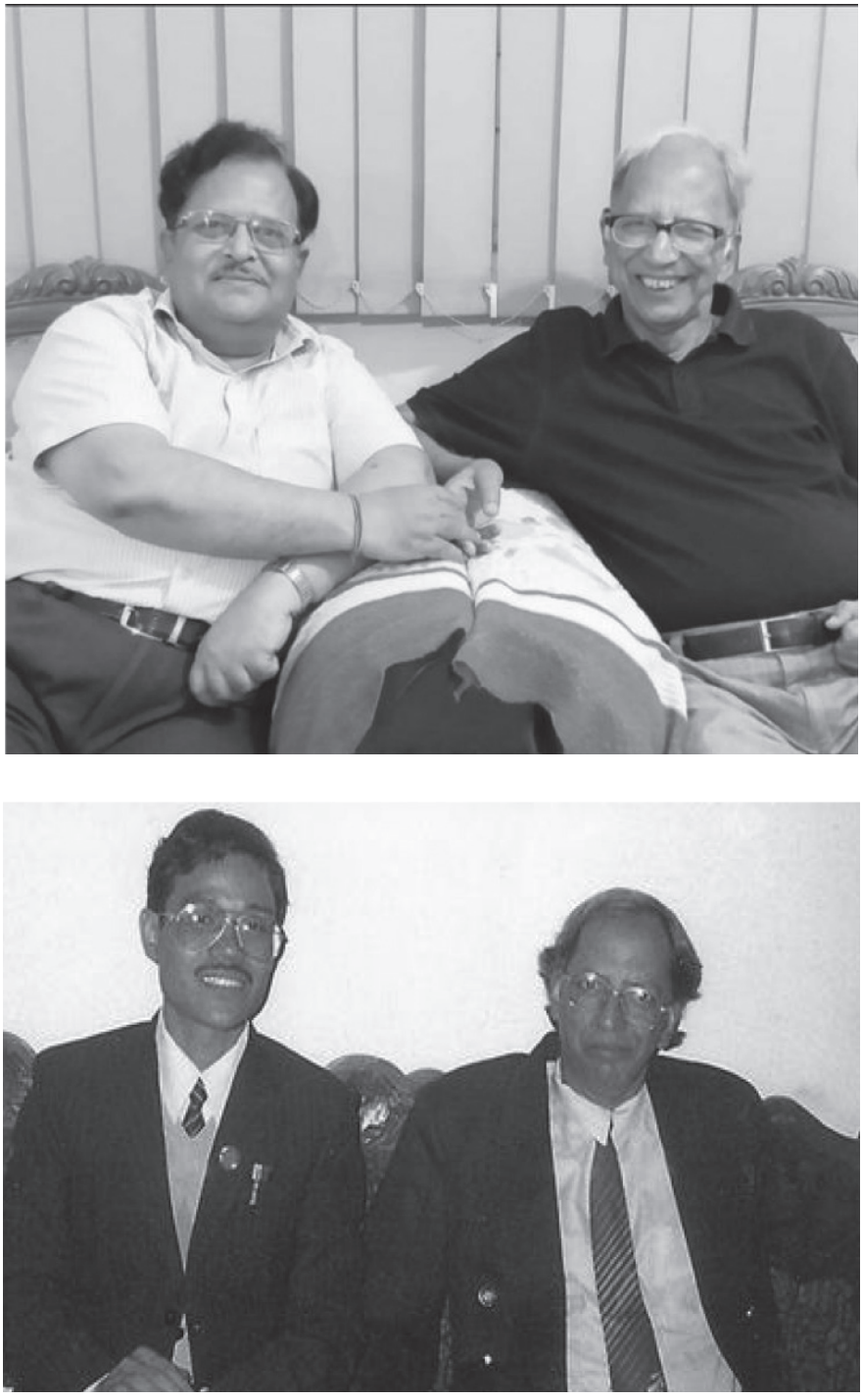

Fig. 4: Top: Dinesh C. Uprety (right) with the late Akhouri Hemantranjan (former Head of Department of Plant Physiology, Banaras Hindu University, Varanasi). Source: Archives of Uprety family. Bottom: Dinesh C Uprety (right) with his 1997 PhD student the late Bimal K. Rabha, when visiting Assam. Source: Rakesh Pandey, one of the authors.

RESEARCH AND TEACHING

Dinesh Uprety had close to 50 years of teaching and research experience including being Emeritus Scientist (ICAR) at the Division of Plant Physiology, IARI, New Delhi. His courses had included: Global Climate Change; Stress Physiology; Experimental Plant Physiology; and Plant Water relations. In addition, he has lectured and done research internationally including: Kenya (Nairobi Institute, 1979); UK (Rothamstead Agricultural Experimental Station, 1984- as UNDP Fellow); USA (FACE Research at Duke University and in Arizona, 1994; Goddard Institute of Space Studies, Columbia University, New York, 2003; Visiting scientist, Climate Change Lab USDA, Beltsville, Maryland, 2004); Sri Lanka (University of Perdinya, 2000); Nepal (Nepal Agricultural Research Council, Kathmandu, 2000); Bangladesh (Agriculture Research Council, Dhaka, 2000); The Netherlands (Open Science Congress on Global Change, Amsterdam, 2002).

Dinesh Uprety played a key role in making IARI as main global center for CO_2 enrichment research on crops in the South Asian Region. He served as the leader for CO_2 enrichment research and technology at IARI, New Delhi. The CO_2 enrichment technology/ facilities like Open Top Chamber (OTC) was designed, made, and transferred to Bangladesh, Nepal, Pakistan and Sri Lanka for common multi-country, multi-disciplinary experiment to study the responses of crop plants to the global climate changes. FACE (Free-Air Carbon Dioxide Enrichment) technology, at IARI, was designed and developed by Dinesh C. Uprety with financial support from the Asia Pacific Network (APN) for Global Change Research; it was done in collaboration with Dr. H. K. Maini from the National Physical Laboratory, New Delhi. Dr. Uprety established the first FACE facility in India at IARI. Thus, India became the second country after Japan to have such a facility in Asia. This technology became operational for the first time in IARI for South Asian countries. In comparison with OTC, the cost of FACE is higher but at the same time there are various advantages to it. These include: i) No observable effect of ambient environment on plants other than the elevated CO_2, ii) Stable control of CO_2 concentration, iii) Large plot size, iv) Sufficient plant material for extensive sampling and, v) Lower cost per sample.

Figure 5 shows photographs of the Open Top Chamber (OTC; Top) and Free-Air Carbon Dioxide Enrichment (FACE, bottom) facility at IARI, New Delhi.

Fig. 5: A photograph of an 'open top chamber' and Free-Air Carbon dioxide Enrichment (FACE) facility established by Dinesh C. Uprety at the Division of Plant Physiology, IARI, New Delhi for studies on the effects of elevated CO_2 levels on crop growth and physiology. Top: A mustard crop inside one of the OTCs growing, in 1996, under elevated CO_2 concentration (source: Rakesh Pandey, one of the authors). Bottom: A FACE facility in a rice crop, in 2007. Source: Vijay Paul, one of the authors.

A mid FACE facility was established at IARI for South Asian Region. Dinesh Uprety established the South Asian CO_2 crop research network of the participating countries wherein scientists, students and government officials from South Asian countries and Indian scientific institutions were trained for CO_2 enrichment research and technology. Basic morpho-physiological data on the crop responses to the elevated CO_2 and temperature were generated and processed for modeling purpose. The physiological data, obtained under his leadership, helped in tailoring plants and identifying management practices for future high CO_2 environment. This is considered as his major contribution in solving the Global Issues before us.

Dinesh Chandra Uprety is the author or the coauthor of more than 150 publications, including 9 publications in Hindi, in international and Indian journals. Remarkably, his contributions include five coauthored books and five chapters in books-cited e.g., under Reminiscences. A key contribution of a research scientist is the training he or she imparts to the next generation. Dr. Uprety guided and trained ten graduate students. A list of his graduate students, with the titles of their theses, is shown chronologically in Appendix 1.

Summary of his Research Achievements

Here, we have taken the liberty of basically reinforcing, in our words, what was already said about his research by Subramanyam et al. (2019).

Dinesh C. Uprety, who had formerly worked at the Indian Council of Agricultural Research (ICAR), New Delhi, was a leader in investigating the impact of the global increase in [CO_2] on agricultural crops in India (*Brassica*, rice, mung bean, and wheat; Uprety et al. 1995, 2003). Dinesh was the key scientist to have improved the existing global technology and adapted it to the needs of India and the rest of South Asia-in view of its unique climate and different plant species used there. In particular, he focused on moisture and

temperature stress effects on the physiology of *Brassica* and rice species (Uprety and Tomar, 1993; Uprety et al. 1995). Further, he succeeded in transferring CO_2-responsive characters from *Brassica campestris* to the hybrid *Brassica oxycamp*. Furthermore, he, together with his coworkers, made significant contributions, to the understanding of what elevated CO_2 does to the quality of the grain in *Brassica* plants – Uprety and his team observed a clear improvement in the quality of oil. In rice cultivars, Uprety and Reddy (2008) and Sinha et al. (2011) demonstrated, at elevated CO_2, improvement in the structure & chemistry of the grain as well as in the nutritional & cooking quality. Further, Uprety et al. (2012) provided new and valuable information on various green-house gas mitigation technologies. And, finally, Dinesh Uprety made sure that the newly developed technologies (see e.g., Uprety and Reddy, 2016) reached not only to other scientists, students, and policy-makers, but more importantly to the farmers– so that they could identify strategies to counter the challenges of rising CO_2 and the temperature.

Recognition for his Research

Dinesh Uprety was a leader of South Asian and Indian Programme on CO_2 enrichment research & technology at the Indian Agricultural Research Institute (IARI), New Delhi, India., His field of research included : Photosynthesis, source sink relationship, impact of climate change on crop plants as well as mustard (Brassica). He and his research has been recognized through several fellowships and awards. He was an elected fellow of the National Academy of Sciences, India; Start International, USA; Indian Society of Plant Physiology; and, Society for the Science and Climate Change and Sustainable Environment. In addition, he received numerous awards, such as a gold medal (for being a distinguished senior agricultural scientist of the Academy of Agricultural Science, India); 2004 Sukumar Basu Memorial Award; 2014 H. S. Srivastava Gold Medal of the Academy of Environmental Biology; 2016 Dr. B. N. Singh Memorial Lecture Award of the Centenary of Banaras Hindu University; 2017 honor at the 8th International Conference on photosynthesis for significant research contributions to the field of Photosynthesis at the University of Hyderabad; and the 2020 Life Time Achievement Award of the Society for Science of Climate Change and Sustainable Environment, New Delhi.

In addition to the above, D. C. Uprety has served as the (i) 1999: Vice President of the Indian Society for Plant Physiology; (ii) 2012: President of the Society of Climate Change and Sustainable Environment; (iii) 2012: Editor-in- Chief of the Journal of Climate Change and Environmental Sustainability; (iv) 2010-2012: Eminent Citizen, MGNREGA (Rural Development Ministry of Government of India); and (v) Principal Investigator USERS (Utilization of the Scientific Expertise of Retired Scientists) Project, DST (Department of Science & Technology), India.

REMINISCENCES

We present below the wonderful reminiscences of both the personal as well as academic life of Dinesh Chandra Uprety by several – who knew him dearly. We have arranged them in the following order: from the family: daughter (Prabha) and younger brother (Vijay); from two senior colleagues (Girish Srivastava and Mohan C. Ghildiyal); his first student Sitapathi R. Voleti; and then three of the authors (Sudhir K. Guru, Pallavi Saxena & Leena Borah), and a long-time co-worker, Neeta Dwivedi.

1. Prabha Dhariyal

(e-mail: prabhadhariyal@gmail.com)

Fathers are always special for their daughters, and I am highly blessed to have a father like him. He was a man with a pure heart. He was always kind, loving, caring and understanding. He was a man of moral values which he imbibed in us. He treated me like a princess. He used to keep me and my mom in high spirits. He has a sweet family of 5 sisters and 2 brothers. He is being loved by us all. The enthusiasm he had in his eyes for Science and the zeal through which he did his work cannot be expressed in words. Even at the age of 75, he was very active. He used to inspire the young generation. His books are read by many students and his work is acknowledged by all. He always wore an infectious smile on his face and made everyone feel good with his warm words.

I had never seen him being angry with anybody. All our family members including his brothers and sisters liked him very much; It has been a truly blessed life, indeed.

2. Vijay Uprety

(Formerly at Honda India Power Products, Delhi, India; e-mail: vupreti@hotmail.com)

My brother, Dr. D. C. Uprety-- Dadda (elder brother) as I used to address him, was a father figure to me. An erudite, articulate, compassionate & family man that you would ever come across. He always exhibited positivity & I fail to recall any instance of him being ever critical. He loved his work. I could see the exuberance of a child in him when he used to talk about advancements in science & what the future holds. He was proud of the scientific fraternity, peers & students alike. The agricultural fields were like a second home to him. I have yet to come to terms to the fact that he is not around anymore. But, what he has inculcated in me & the extended family can never go away. I, and am sure many others, will aspire to emulate what he stood for.

3. Girish C. Srivastava

(Formerly at the Division of Plant Physiology, ICAR-IARI, New Delhi, India; e-mail: g_c_srivastava@rediffmail.com)

My association with Late Dr. Dinesh Chand Uprety was since 1965, when he was working on the effects of salinity on crop yield with late Dr. M. N. Sarin in the erstwhile Division of Botany at IARI. He worked in different positions in the Division of Plant Physiology and finally became the National Fellow of ICAR. He worked upon the '*Effects of climate change on crop productivity'* which is a very significant area of research today. He developed good infrastructure facility needed for studies on '*Climatic change and its impact on plant productivity'*. He was a member of Global Climatic Change Group which enabled him to contribute significantly to the cause of agriculture in association with international eminent climate change scientists. We have lost a great scientist, who was humble, polite, and a pleasant extrovert. He will always be remembered for his simplicity, hard work and outstanding research contribution.

4. Mohan C. Ghildiyal

(Formerly at the Division of Plant Physiology, ICAR-IARI, New Delhi, India; e-mail: mc_ghildiyal@rediffmail.com)

I am deeply saddened that Dr. Uprety is no more amongst us. I had a long time association with him, starting from college days in the 1960s at the DSB (Dev Singh Bisht) Government College, Nainital to the Division of Plant Physiology, IARI New Delhi. We have also worked together in a USDA (United States Department of Agriculture) project on '*Photosynthesis and Crop Productivity'* under tropical environment under the leadership of Prof. Girraj Singh Sirohi, a great plant physiologist of our time. Prof Sirohi also left us in 2022. That was a great loss particularly to Indian plant physiology and this is yet another loss. Dr. Uprety was a very polite, affectionate and humble person. He was a brilliant scientist and made notable contributions in Plant Physiology. As already mentioned in this *Tribute*, he did his Ph. D. under the guidance of Dr. Mahendra Nath Sarin. Initially he worked on quality aspects of cereal grains in the Cereal Laboratory of IARI. In the Division of Plant Physiology, he had started working on *drought resistance of crop plants*, but of late, his interest was on *climate change and its impact on agriculture*. He was instrumental in developing the FACE (Free-Air CO_2 Enrichment) facility at IARI for such studies. Though he is no more with us, his memories will always be our precious treasure.

5. Sitapathi R. Voleti

(Formerly at the ICAR-Directorate of Rice Research, Hyderabad, India; e-mail: drvoletisr@gmail.com)

I am proud to have been the first PhD student of Dr Dinesh Chandra Uprety. He is known for his passion for research in the areas of photosynthesis, drought stress, water relations, during the early period. (All this was prior to his becoming a National Fellow in the ICAR system.) One of his research areas was on *Eruca sativa*, *Brassica* reciprocal hybrids developed by Dr Shyam Prakash and Dr. Pulugurtha B. Kirti, in the erstwhile National Research Centre on Plant

Biotechnology, IARI, New Delhi. This resulted in identifying that photosynthetic characters such as chlorophylls, rates of photosynthesis, and stomata attributes come from the female parent while the attributes of water relations are from the male parent, which play a key role in the stress tolerance. Also, this work identified patchiness in stomata character which helped in source sink maintenance at the end of stress period. At this juncture, several students benefitted working in areas of research similar to his (see: Uprety and Rabha, 1999), and this was because of his experience in stress physiology and plant water relations, and taught by him in post graduate courses. In association with the National Physical Laboratory, Dinesh Uprety played a key role in making IARI as main global center for CO_2 enrichment research on crops in the South Asian region especially in brassica, rice and wheat. Basic morpho-physiological data on the crop responses to the elevated CO_2 and temperature were generated and processed for modeling purpose. The physiological data, obtained, under Uprety's direction, helped in tailoring plants and identifying management practices for future high CO_2 environment. For my own research with him, see Voleti and Uprety (1997) and Voleti et al. (1998) on how moisture stress affects photosynthesis in *Brassica carinata*.

The post-graduate course on "Global Climate Change" at IARI has been the outcome of this wonderful achievement. Currently almost all the universities in India have included it, in their course curriculum.

6. Sudhir K. Guru

(Department of Plant Physiology, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, India; e-mail sk.guru@gbpuat-cbsh.ac.in)

When I joined the Division of Plant Physiology, ICAR-IARI for my Ph. D. degree in 1993, Dr. Dinesh Uprety was working there as one of the senior faculty members. I had the good fortune of learning many things from him in the classrooms as well as through personal interactions. It was very exciting to see the Open Top Chambers, installed by him in the campus. After I left IARI and joined as a faculty member at Pantnagar University, I started working on herbicide resistance and weed biology. For few years, I had lost touch with Dr. Uprety. Then in 2006, during a review meeting of a research project, to my pleasure, he was an expert. That refreshed our relationship and we continued to be in touch till few months before his death. During this period, he used to telephone me and we kept in touch with each other. He used to encourage me to work on basic physiological aspects and on the effect of climate change on plants. In one of our conversations, just before he fell ill for the last time, he had expressed his willingness to visit Pantnagar with his wife Kamla, a wish which remained unfulfilled. During our conversations, he would often tell me "*You are like our own children*". This is something what I miss today. One feels fortunate to have come across personalities like him, who rose to fame with hard work, perseverance, but maintained the simplicity and affection for his students throughout.

7. Pallavi Saxena

(Department of Environmental Sciences, Hindu College, University of Delhi, India; e-mail: pallavi saxena@hinducollege.ac.in)

Dr. Dinesh Chandra Uprety was a great mentor to me and many others I know. His extraordinary teachings and his wonderful ways of dealing with others around him remain deeply engrained in my mind. I have fond memories of working with him on a significant book dealing with all the relevant technologies concerning green-house assessment in crop studies (Uprety and Saxena, 2021; https://doi.org/10.1007/978-981-16-0204-7). It was indeed a wonderful experience.

We used to meet quite often and discuss various aspects of how we can help improve crop productivity for the benefit of growing human population. Unfortunately, since August 2022, he had serious health issues, and on January 28, 2023, he passed away. Even now, his voice whispers in my ears. I really miss him; he was a great mentor. His blessings, and his teachings will remain invaluable to me and many others I know. We all miss him dearly.

8. Leena Borah

(Department of Environmental Biology and Wildlife Sciences, Cotton University, Guwahati, Assam; e-mail: leena.borah@cottonuniversity.ac.in)

I had the opportunity to meet Dr. D. C. Uprety in the Department of Environmental Science, Tezpur University, Assam, during 2010-2011, when I was enrolled there for my PhD; I was introduced to him by my supervisor Prof. Kushal Kumar Baruah. I was fortunate to have listened to his wonderful lectures and was amazed at his immense knowledge. He was such a great scientist, yet so humble and down-to-earth. He always had a smile on his face and was very kind-hearted and approachable. I was fortunate to have the opportunity of co-authoring a review with him (Uprety et al. 2011) dealing with methane in rice agriculture. Dr. Uprety's passion and enthusiasm towards his work has motivated and encouraged me a lot. It is a great loss to the scientific community that such a personality is no longer with us. We are deeply saddened at his demise and pray that his soul rests in eternal peace and that his blessings are always upon us.

9. Neeta Dwivedi

(Water Technology Centre, ICAR-IARI; e-mail: neeta.iari@gmail.com)

I had a long association with Dinesh C. Uprety working with him for almost 15 years, during 1995-2009. My research with him involved detailed investigations on Climate Change and Crop Yield; in particular, we studied the effects of rising atmospheric CO_2 and its effects on photosynthesis and grain quality of plants of importance to agriculture. In addition, our studies included the effects of ploidy levels on wheat (see Uprety et al. 2009). Details of these findings (on the above topics) can be easily found from the following papers. They include: Uprety et al. (1997, 1998, 2001) on *Brassica* sp.; Uprety et al. (2000, 2002, 2003), Sujatha et al. (2008, 2012) & Dwivedi et al. (2012) on rice; Desmukh et al. (2007) on pulses; and, Maini et al. (2002) & Uprety et al. (2004, 2006a, 2006b, 2010) on many crops. Whatever I am today, it is because of his guidance, affection and blessings. Figure 6 shows a recent group photograph of some of us who kept in regular touch with Dr. D. C. Uprety.

Fig. 6: A photograph showing (from left to right) Anjali Anand, Neeta Dwivedi, Kamla Uprety, Dinesh C. Uprety and Vanita Jain at Dr. Uprety's home in Delhi.

CONCLUDING REMARKS

Dinesh Chandra Uprety was a scientist par excellence, a great teacher, and a wonderful human being. He greatly improved the existing global technology and adapted it to the needs of India, focussing on mustard and rice. His research included transfer of CO_2-responsive characters from one species to another, and the understanding of what elevated CO_2 levels do to the grain (structure and chemistry), including oil in them, as well as their nutritional & cooking quality. In addition, he provided key information on green-house gas mitigation technologies and made sure that this reached the farmers.

On the personal side, Dinesh was indeed a wonderful husband, brother, father, teacher and a colleague. It is best done by quoting just, as few examples, from the Reminiscences:

*"*Whatever I am today, it is because of his guidance, affection and blessings*" (Neeta Dwivedi); *"*He was such a great scientist, yet so humble and down-to-earth. He always had a smile on his face and was very kind-hearted and approachable*" (Leena Borah); *"*Even now, his voice whispers in my ears. I really miss him; he was a great mentor.* " (Pallavi Saxena); *"*He would often tell me, "You are like our own children". This is something what I miss today."* (Sudhir K. Guru); *"*He always exhibited positivity & I fail to recall any instance of him being ever critical. He loved his work. I could see the exuberance of a child in him.*" (Vijay Uprety); *"*I am highly blessed to have a father like him. He was a man with a pure heart. He was always kind, loving, caring and understanding*" (Prabha Dhariyal).

We end this Tribute to our friend and to one of the most wonderful scientists we have associated with two photographs. Figure 7 shows him with some of the faculty and students at IARI, and figure 8 shows him with some of the books he had written or edited, as well as some of the awards he had received in his life.

Fig. 7: A 2007 group photograph. Dinesh C. Uprety (sitting in the middle row, fourth from the left) with some of the faculty and students of IARI in the Division of Plant Physiology. Also in the photograph are Mohan C Ghildiyal (middle row, second from left) and Girish C Srivastava (middle row, fifth from left). Source: Vijay Paul, standing, fourth from right.

Fig. 8: Dinesh C. Uprety at his Delhi home with a collection of books written by him as well as the awards/honours, bestowed upon him. Source: Uprety Family Archives.

Appendix 1.

A list of students and their thesis titles submitted under Dinesh C. Uprety.

1987: Ravendra Kumar (M.Sc: Effect of water stress on photosynthesis and productivity of hexaploid and octoploid triticales (*Triticosecale wittmack*).

1988: Anju Bhatia (M.Sc: Effect of water stress on photosynthesis water relations and productivity of mung bean (*Vigna radiata* L. Wilczek).

1993: Sitapathi Rao Voleti (PhD: Physiological studies on drought resistance of *Brassica carinata* hybrids and their parents).

1997: Bimal Kumar Rabha, PhD: Interactive effect of elevated CO_2 and moisture stress on photosynthesis productivity and drought resistance in mustard (*Brassica juncea* L.).

1998: Veerasamy Mahalaxmi, M.Sc.: Physiological studies on the interactive effect of elevated CO_2 and nitrogen fertilization in mustard (*Brassica juncea* L.).

2003: Ranjan Das (PhD: Characterization of responses of brassica cultivars to elevated CO_2 under moisture stress condition).

2005: Kalleril Bhaskaran Sujatha (PhD: Characterization of the response of rice cultivars (*Oryza sativa* L.) to the interaction of elevated CO_2 and temperature).

2007: Koushik Chakraborty (M.Sc.: Effect of elevated CO_2 on post-flowering changes and grain quality in two *Brassica species*).

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We sincerely acknowledge the inputs / contributions from the family members of late Dr. Dinesh C. Uprety, which includes his wife Kamla Pandey Uprety, his brother Mr. Vijay Uprety, and daughter Prabha Dhariyal. We also acknowledge with thanks "Reminiscences" by his colleagues Dr. Girish C. Srivastava, Dr. Mohan C. Ghildyal, Dr. Sitapathi R. Voleti and Dr. Neeta Dwivedi.

Contributions of the Authors

All the authors had equal contributions except that S. K. Guru was responsible for collecting the Reminiscences and G. Govindjee for the final editing of the manuscript before its submission.

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