

IN MEMORIAM

Daniel Côme, scientist and friend

26 July 1935–30 May 2007



Daniel Côme

Daniel Côme was born in 1935 in Lavaré, a small village in the Sarthe area of western France. As he was a brilliant pupil at the primary school, his schoolmaster persuaded his family to allow him to continue his formal education. He obtained a scholarship to enter secondary school at Le Mans, then at Rennes (in Brittany), and in 1956 he passed the entrance examination at the Ecole Normale Supérieure (ENS) of Saint-Cloud, a famous French high school. As a student of this high school from 1956 to 1960, he graduated from the University of Paris (La Sorbonne) with a DES (equivalent to a MSc degree) in plant physiology in 1959, and succeeded in the 'Agrégation in Natural Sciences' in 1960, a competitive examination qualifying successful candidates to hold teaching posts in French *lycées* (secondary schools). He was appointed as Assistant Professor from 1960 to 1965 at the University of Paris, Associate Professor in Plant Physiology from 1965 to 1975 at the Université Pierre et Marie Curie (Paris 6) and, later, Professor of Plant Physiology in the same university. On his retirement in 2004, he was appointed Emeritus Professor of the

Université Pierre et Marie Curie. He never forgot his rural origin, and he would sometimes entertain visitors by speaking in the French of the Sarthe region where he spent his early life.

He carried out his doctoral studies in the CNRS (National Centre for Scientific Research) laboratory, Physiologie des Organes Végétaux après Récolte (Plant Organ Postharvest Physiology) at Meudon, near Paris, under the guidance of Professor R. Ulrich, and he was awarded his Doctorate in Science in 1967. His research concentrated on gas diffusion through seed coats and the involvement of their phenolic compounds in the regulation of oxygen supply to the embryo. This work was published in numerous papers in French journals in the 1960s and 70s, and perhaps it did not receive as much exposure and recognition among English-speaking scientists as it deserved. The later research of his group covered many aspects of seed biology: the germination process and its regulation by external factors; embryo dormancy sensitive to cold (apple) or to ethylene (sunflower); seed-coat imposed dormancy and the role of phenolic compounds (apple, the cereals, barley, wheat and oat); metabolic regulation of germination and dormancy, in particular the involvement of the pentose phosphate pathway and energy metabolism; storage of recalcitrant and orthodox seeds; and evaluation and improvement of seed quality. Recently, he renewed his interest in the effects of seed coats, this time with research on the metabolism and action of abscisic acid upon regulation of oxygen diffusion, which was published in 2006. Most of these studies were carried out on species of horticultural (apple, cyclamen, primula, tomato, leek, carrot, endive), forest (oak, *Araucaria*, *Symphonia*) and agricultural (barley, wheat, oat, sunflower, sugar-beet) importance. This emphasis on cultivated species and applied research led Daniel and his group to occupy a unique position in French seed science that he maintained throughout his career, at the interfaces of basic seed biology research with horticulture, seed technology and the seed business. He was often contacted by various seed

companies for his expert advice, and his laboratory signed numerous contracts for projects to evaluate seed quality with physiological and biochemical markers, or to develop treatments (breaking of dormancy, priming) for improving seed quality. Daniel contributed an enormous body of scientific work on plant physiology: he was author or co-author of more than 270 publications in scientific journals and proceedings, 25 chapters in books, two books in French, *Les obstacles à la germination (Obstacles to germination)* in 1970 and *Dictionnaire de la biologie des semences et des plantules (Dictionary of seed and seedling biology)* in 2006, editor of two books, *Les végétaux et le froid (Plants and the cold)* in 1992 and *La chaîne du froid (The 'cold chain')* in 1995, and co-editor of three proceedings of international symposia or workshops.

His activities in applied research led Daniel to be appointed head of the CNRS laboratory, Physiologie des Organes Végétaux après Récolte, at Meudon from 1975 to 1986. It was here that a second interest developed in post-harvest physiology and cold storage of plant organs and food, a field in which he became an expert. In addition to being head of the CNRS laboratory at Meudon, Daniel also headed the laboratory of Physiologie Végétale Appliquée (Applied Plant Physiology) at the Université Pierre et Marie Curie (Paris 6) from 1975, and he moved to the university from Meudon in 1985. In Paris, he built a new team that became a highly productive and respected group of researchers in seed science. To a large extent, thanks to Daniel's enthusiasm and vision, the laboratory attracted many foreign students and scientific collaborators from numerous countries. He forged particularly strong relationships with Polish laboratories – at Warsaw University and the Institute of Pomology and Floriculture at Skierniewice – and with universities in Israel, England, the United States and South Africa. All those who have visited or worked in Daniel's laboratory will testify to his energy and enthusiasm for seed science, to his warm and engaging personality, to his generous spirit and to his infectious bonhomie. Although he always appeared relaxed and jolly, he was actually a glutton for work!

He was the President of the C2 Commission (Food Science and Technology) of the International Institute of Refrigeration (1987–1995) and of the C Section (Biology and Food Science) (1995–1999). He was an honorary member of this institute from 2000. His expertise led to his participation in numerous scientific committees of companies (Limagrain, Pernod-Ricard) or societies, such as the Conservatoire National des Plantes Médicinales, Aromatiques et Industrielles (National Conservatoire of Medicinal Aromatic and Industrial Plants), Société Scientifique d'Hygiène Alimentaire (Scientific Society for Food Safety), and the Bureau des Ressources Génétiques (Bureau of Genetic Resources). He was appointed a

Member of the French Academy of Agriculture in 1991 and Honorary Member of the Rumanian Academy of Agricultural and Forest Sciences in 1997. He received other honours as well, among which were the Education Golden Medal from the Society of Promotion of National Industry, Chevalier of the Merite Agricole (Agricultural Merit) and the Chevalier Cross of Merit Order of the Polish Republic. He was particularly proud of this latter decoration, which he obtained in appreciation for the help he gave to different Polish research laboratories during the difficulties of the Communist period.

Daniel was a mainstay of the International Seed Workshops (organizing the memorable 4th workshop in Angers) and of other conferences, meetings and scientific societies. He will be remembered for his contributions and for his open, friendly, sociable and encouraging manner. When the International Seed Science Society was founded in 1999, Daniel was selected as its first President, and in the 3 years of his tenure, the society grew in strength and energy. In many ways, he was a natural choice to preside over an international society, as he was an enthusiastic internationalist, participating in meetings and conferences all over the world and collaborating with scientists from many countries. Daniel always said that he so much enjoyed the privilege of his life as a scientist – free to meet people and to discuss with them, unrestricted by national borders and political or religious constraints.

As he progressed through the various stages of his academic career, Daniel was involved in almost every aspect of university life. He was responsible for numerous teaching units and participated in various university committees. In particular, he was responsible for the DEA (French Master's degree) in Plant Biology and Physiology from 1975 to 1990, for the DESS Technologies Appliquées aux Organes Végétaux (French Master's degree in Technologies Applied to Plant Organs) and Co-Deputy Head of the 'Cereal Industries' speciality of the Institute of Sciences and Technology (IST), an internal school of the Université Pierre et Marie Curie that graduates practitioners in food sciences, from 1990 to 2003. He was loved by his many students since he was a devoted teacher who spent an enormous amount of time with them, always ready to help with advice, letters of recommendation, proposal of laboratories for training periods, or just friendship in informal discussions. All the students, undergraduates and graduates, and research workers that he has educated will bear in mind his scientific precision and rigorous requirements, as well as his availability, his communicative enthusiasm and his kindness.

It is difficult to find the words to express how acutely Daniel's loss will be felt, both within and outside his professional sphere. I joined his group in 1976, and it

was a privilege and a pleasure for me to work with him. Daniel founded a seed biology school and has passed on to me all his administrative and scientific responsibilities, which is a challenge. Thank you Daniel for teaching me some guiding concepts, among which are the importance of human communication and humbleness, how to be pragmatic and to confront and overcome a problem. Our close collaboration continued until the time of his death. He fought bravely against his leukaemia and tried as long as possible to maintain his scientific activity. We were considering a new book on the germination, dormancy and quality of seeds of the numerous plant species studied in the laboratory during his career. Although it will take some years, this project

will be completed in honour of Daniel. There were very few people who did not get on with Daniel, admire him and relish his company. All his friends, colleagues and students will remember his charisma, his straightforward, open and supportive character, his humour, and his joy of living and love of science. He will be greatly missed by us all, by those who worked with him and by his seed scientist friends and colleagues throughout the world.

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