

DBT turns 25

# Middle of a long haul



Having served DBT in its formative years after he took over as Secretary from Dr. S Ramachandran, the department has a special place in the memories of Dr. C R Bhatia.

Dr. Chittranjan Bhatia obtained his Ph.D. degree in plant genetics and breeding from the Indian Agricultural Research Institute, New Delhi in 1961. After post-doctoral training with the Agricultural University, Wageningen, the Netherlands, and at the Brookhaven National Laboratory, New York, U.S.A. he joined the then Biology Division of the Bhabha Atomic Research Center (BARC), Mumbai in 1966. He worked there in various capacities till 1993. He was the Director, Bio-Medical Group, at BARC when

appointed as Secretary, Department of Biotechnology (DBT), in the Ministry of Science and Technology.

Apart from being an elected fellow of all major scientific academies in India, he is also a recipient of Dr. S. K. Mitra award from INSA, Prof. R. N. Tandon award from NASI and D. P. Bhasin Award.

Currently he is Co-chairperson, Joint Working Group for Indo-US collaboration in Agricultural Biotechnology; and member, Maharashtra Biotechnology Commission; Vice-President, Agri-Biotech Foundation, Hyderabad; Member, DST Committee for Technology Incubators.

Dr. C R Bhatia spoke to Biotech News and recounted his days at DBT and the role he played in shaping DBT as a focused and effective organisation in his comparatively short but eventful time at its helm.

## Middle of a long haul

► **BIOTECH NEWS (BTN): YOU WERE DBT SECRETARY FROM 1993 – 1995. WHAT WERE THE MAJOR ACHIEVEMENTS DURING YOUR TENURE? WHAT WERE THE CHALLENGES YOU HAD TO OVERCOME?**

**CHITTRANJAN BHATIA (CB):** When I joined DBT as a Secretary in 1993, my predecessor Dr. S. Ramachandran had already laid the basic foundation of the department as Secretary, and prior to that as Chairman, National Biotechnology Board. Hence, my main responsibility was to nurture the institutions established by Dr Ramachandran. Thanks to his efforts, there was lot of awareness about biotechnology among the scientific community as well as amid

about 4-5 years they came out with local cotton hybrids with the Bt gene. These Bt cotton hybrids were evaluated in multi-location trials for a few years, and finally the Bt cotton was approved for commercial cultivation in 2002. I understand, currently more than 60 cotton hybrids with the Bt gene have been approved for cultivation.

The human contraceptive vaccine developed at the National Institute of Immunology, New Delhi was in phase-1 clinical trials when I joined the DBT. There were high expectations; unfortunately it did not succeed.

Human resource development in biotechnology was initiated by Dr. Ramachandran. He

(DAE) background with very strong traditions of in-house research and development. The DAE programme was established in 1950's. At that point of time, the human resources and R&D situation for DAE was similar to what the DBT faced after its establishment 25 years back. Very few trained people were available. DAE created, in house, research and development laboratories and trained people in different areas related to their programmes. After joining, I wished that DBT had its own institute for training, research and product development focusing on high technology areas. When DBT, as a funding agency, gives research grants to scientists working in other

established institutions, the investigator's first loyalty always remains to the organization that pays the salary. Even though the funding from the DBT is massive, it inspires only a secondary loyalty. I often felt that if DBT had its own research center, it may have yielded more relevant results and products.

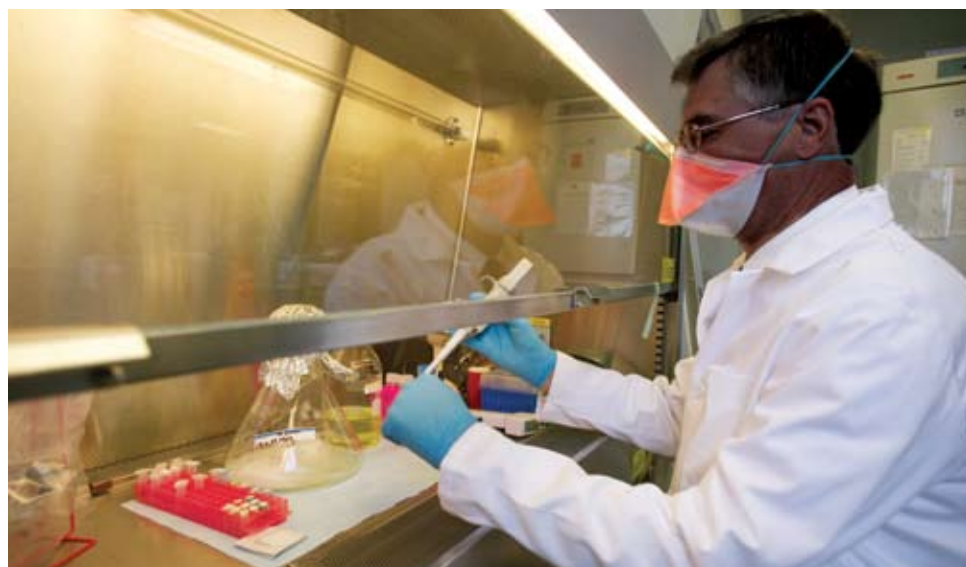
**BTN: ANY OTHER REGRETS ABOUT UNFINISHED AGENDA?**

**CB:** As I said earlier, one of the major disappointments was the failure of female contraceptive vaccine.

There was another ongoing programme at the Institute

of Science, Bangalore aiming to develop a male contraceptive. Unfortunately, that also did not result in any product. There was an industrial project for manufacturing injectable polio vaccine with foreign collaboration, but the technology provider withdrew midway. All these programs were of high societal relevance, and their let down was very disappointing to me personally.

**BTN: YOU HAD A VERY DISTINGUISHED CAREER AS A PLANT BIOTECHNOLOGIST AT THE BHABHA ATOMIC RESEARCH CENTRE PRIOR TO COMING TO DBT.** ►►



the informed public. At the same time, biotechnology had generated high expectations as well.

What I consider as my significant contribution was to permit the import of some 100 seeds of Cocker-132 variety of cotton with the *Cry1Ac* gene from *Bacillus thuringiensis* (Bt) by a private seed company. That was the modest start leading to what is now recognized as the Bt cotton revolution in the country. The company used the plants raised from these seeds in an accelerated back crossing program to the local parental lines. In

provided support for biotechnology education and training at different centers of higher education. This established biotechnology at many places in the country. I mainly nurtured what was already initiated. I was fully aware of the short period of my appointment and hence, the focus was to strengthen what had already been established.

**BTN: IF YOU HAD A LONGER TENURE WHAT WOULD HAVE BEEN YOUR WISH LIST?**

**CB:** I came to DBT from the Department of Atomic Energy

► **HOW DID IT FEEL FOR SOMEONE FROM A RESEARCH LABORATORY TO GO DIRECTLY WORK IN THE GOVERNMENT?**

**CB:** Basically, I am trained as a plant geneticist and breeder to develop new varieties of crop plants that are better than the existing ones. Our laboratory was the first in the country to show expression and inheritance of the introduced gene into model plant system. With this laboratory background, DBT responsibility was a great change. On the first day after the introductions in the morning, there was a huge bundle of files on my table in the afternoon. I had never seen so many files and they looked very intimidating. Eventually, I got used to the files, and developed skills to deal with them.

**BTN: THIS YEAR DBT HAS COMPLETED 25 YEARS OF ITS EXISTENCE. YOUR COMMENTS?**

**CB:** Indeed it was a very good idea to establish a separate Department of Biotechnology, as it provided a special focus to the new, upcoming technological possibilities. Biotechnology impinges on the traditional areas of health, agriculture, environment, industry and others. It was great to have brought special focus to biotechnology as a whole, though the new technologies intrude into the turf of well established organizations.

**BTN: HOW CAN WE BREAK THE ISSUE OF TURF?**

**CB:** This is highly dependent on the overall personality and attitude of the concerned individuals. Some are more receptive to new ideas and new technologies and are willing to try them. Others look at the new tools and techniques as a threat to their established knowledge, with the apprehensions that they may diminish the importance of their organization or their own contributions. A few may feel that this would be good for the society and the country and their organization should compliment the

efforts. It happens in all areas. The importance of collaborations and working together to deliver useful products can never be overstated. As mentioned earlier, we were developing new crop varieties at BARC, knowing very well that we alone cannot take these to the farmers. We have to go through the established systems of the Indian Council of Agricultural Research and the State Agricultural Universities.

**BTN: THE COUNTRY IS PASSING THROUGH A STATE OF CONFUSION TODAY REGARDING THE DEVELOPMENT OF GM TECHNOLOGY IN AGRICULTURE. HOW DO YOU EXPLAIN?**

**CB:** There is always opposition to new technology. There was lot of opposition when pasteurization of milk was introduced in the United States. The same was true for vaccines, even the steam engines and remote control for TV were suspected. The other major reason is the widespread belief that human beings have no right to tinker with the creation of the super power (God). People do not realize that the currently cultivated plants are the product of continuous human selection and breeding. The crop plants of today are very different from their ancestors from which they have been selected. In a way, genetic modification of crop plants has been going on over the last 10,000 years since the humans domesticated the food crops and started growing them instead of collecting grains from natural stands.

**BTN: THAT'S THE SCIENCE PART OF IT. BUT TODAY THE CHALLENGE FOR GM TECHNOLOGY IS LESS SCIENTIFIC AND MORE ACTIVIST. SO HOW CAN THIS BE TACKLED?**

**CB:** Plant genetic engineering (GE) technology was developed almost simultaneously in Europe and USA. However, the Americans were quick to commercialize the new technology. Initial fear in Europe was that the new GE technology

products will be dominated by the American companies. The other reason is that the European agriculture is highly subsidized. They over produce, but due to high production cost are not able to sell the surplus in the international market. European organizations started the anti-GM lobby, they have even prohibited imports from countries that grow GM crops.

I would say that the farmers are the best to judge of what is beneficial for them – either increases in productivity or reduction in the production cost. The activists oppose things without an adequate understanding of the scientific facts. Their irrational opposition to GE crops dissuades investment into technology by the private sector as well as deployment of human resource into R&D in this area. If I am in an agri-technology company, investing shareholder's money, I would think twice before investing in GE technology because I am not sure what I am doing will not be stalled on non-scientific considerations. If I am a scientist working for the government, I may not be putting my money, but I am putting my effort and time. If I am not sure whether my product will reach the farmers or not, I will be reluctant to put in years of painstaking efforts that go into development of GE crops.

**BTN: ANY MESSAGE TO YOUNGER GENERATION OF BIOTECHNOLOGISTS?**

**CB:** My message to the younger generation is that they should focus their efforts to develop products better than what already exist in whatever area you work. It is important to have training in an area of basic sciences, but the final goal should be to benefit the society by converting knowledge into products. When that happens, as an individual one can make money as well as give return to the society. The translational research combines personal, societal, and national interests. ■