Maharashtra Hybrid Seed Company

Dawalwadi, PO Box 76, Jalna-431203.(www.mahyco.com)

The Maharashtra Hybrid Seed Company Limited, popularly known as Mahyco, has a remarkable history in many ways. It was set up in 1964 by a man with farming but no business experience, and at a time when public sector research institutions and government seed companies dominated Indian agriculture. Yet, from small beginnings in the Marathwada region of Maharashtra, the company slowly grew to its present stature as a pioneer and leader in the Indian seed industry with a footprint across India, thanks to its founder, Dr B.R. Barwale's vision of what seed can do for farmers.

"My approach was to use the best available agricultural technology to increase production," says the 79-year-old Dr Barwale who was awarded the Padma Bhushan in 2001 in recognition of his services to Indian agriculture. That has been the cornerstone of Mahyco's success -- a strong, diverse and progressive program of R&D. This, along with its timely and appropriate collaborations with academia and industry, has enabled it to keep pace with new developments across the spectrum and retain its pioneering thrust.

Worldwide too, Mahyco was the first company to successfully commercialize F1 hybrid cotton based on genetic and cytoplasmic male sterility (CMS) systems. In India, Mahyco was the first company to produce and market hybrid sorghum, pearl millet, wheat and sunflower, and the first company to receive approval in 2002 for commercialization of insect-tolerant Bt cotton, India's first genetically improved crop. Mahyco was the first Indian company to commercially grow and market the transgenic Bollgard cotton hybrid in India. It developed a wide range of hybrids with perfect combination of technology and germplasm.

The process for the venture into biotechnology began in 1990, thanks to Dr Barwale's son, Raju Barwale, now the managing director of the company. "In those days, the bollworm was a major threat to the cotton crop. I came across this information which indicated that the crop would tolerate the pest with certain genes known as Bt. We started experimenting with Bt genes in the early 1990s. Subsequently, when we had Bt cotton plants, I remember my 55-year-old breeder come running to my room to tell me breathlessly that the larva had dropped dead on feeding on the Bt cotton plant with its in-built tolerance to the bollworm!

COMMITMENT TO RESEARCH AND DEVELOPMENT

That experience convinced Raju Barwale that biotechnology was the path forward in the coming century. "We had already set up a tissue culture lab in Jalna in ▶▶

1987. We now set up a lab in Bangalore in 1991. In 1998, we set up the state-of-the-art Mahyco Research Centre at Dawalwadi, with biotechnology and ongoing hybrid breeding programs in over 30 crop species and support programs in plant pathology, entomology, cytogenetics, biochemistry, tissue culture, rapid cycling, and various other areas of biotech and transgenic plant research. We have invested over Rs 50 crore on the R&D infrastructure and have continued our resource commitment on an annual basis. Over 200 scientists are engaged in the research programs at Mahyco."

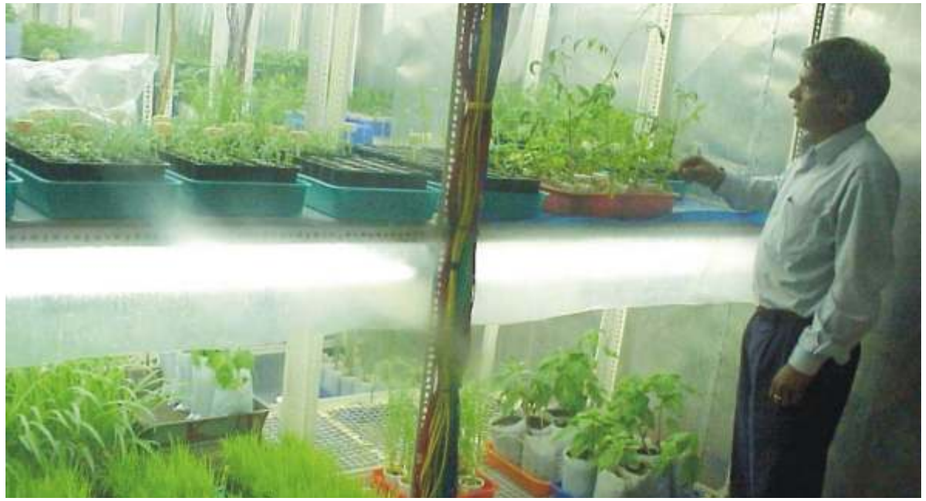
Big money, considering that in November 1964, the founder could not persuade 20 people to contribute Rs 5,000 each towards the share capital of Rs 1 lakh, despite the assurance of a turnover of Rs 1 crore! The Barwale family ultimately put in half the capital, while the remaining partners could pay up only a quarter of their contribution -- the rest was to be taken from the harvested crop! Today, Mahyco has over 1,000 employees, a turnover of Rs 347 crore and is aiming to be a Rs 1,000-crore company.

Recalls Dr Barwale: "I did not have any business experience then. I was the first to plant yellow vein mosaic virus-resistant lady finger (bhindi) which we got from Pusa. That gave me a good crop. When I started growing bhindi, I did not feel I was initiating a big movement. I was just happy that I was a part of the country's growing food grain production for which we felt a great need at that time. Then I planted hybrid maize, sorghum (millet) and bajra in quick succession -- and then wheat. Soon I realized what a big contribution new seeds with new traits could make to a farmer's income. Before the Green Revolution began, I was happy if I got 6 quintals of wheat per acre on my 80-acre farm. Besides, Maharashtra is not a wheat growing area. But when Dr Normal Borlaug's new high yielding varieties came, I got 22 quintals! The same happened with cotton in the 1970s I grew hybrids on ten gunthas for the first time in Maharashtra and found it flowered in 45 days instead of 90 days! Those are the marvels of putting science into agriculture."

Mahyco has always focused on the production of high yielding varieties and hybrid seeds and is a pioneer in many respects through strict adherence to its motto, "Quality Seed - Mahyco Seed". Today, it is engaged in the research, development, production, processing, marketing and after-sales service of 115 products in 30 crop species, including cereals, oilseeds, fibre crops and vegetables. It has to its credit 21 notified varieties. Meeting the diverse needs of farmers in a subcontinent with widely varying soil and agronomic conditions has been a challenging task, but it has been accomplished by a strong research base and the company's seed production, processing, and marketing infrastructure.

In-house research focus at the Mahyco Research Centre has been in a number of areas related to improving crop performance. Tolerance to biotic stresses including pests, diseases and viruses, and abiotic stresses such as drought and salinity and increasing nutrient uptake efficiency are good examples of the work we do. An integrated approach utilising breeding methods, genomics and direct gene transfer has been adopted, to ensure that products are robust and field-ready. ▶▶

Electron Microscope



▶ Molecular breeding and genomics is an area of special focus, especially in key crops such as rice and cotton.

In the case of cotton, the yield per hectare, which was hovering around 300 kg per hectare for more than a decade till 2002, touched an all time high figure of 560 kg per hectare in 2007-08 with the use of Bt cotton. India emerged as the world's second largest cotton producer in 2006-07, edging past the USA. India's share in world cotton production has increased substantially, from 12.5% in 2001-02 to 20.6% in 2007-08 an indication that India is poised to become the number one cotton producer in the world by 2015.

After the success of Bt cotton, Mahyco has developed insect-tolerant or Bt brinjal. Brinjal is a key vegetable crop in India and South Asia, and is affected significantly by the brinjal fruit and shoot borer, with 50-70% of yields affected in severe infestations. Present control methods consist mainly of heavy application of chemical sprays, which leaves residues on the fruit and affects health and the environment. Bt brinjal is effective at controlling the pest, with 80% reduction in sprays seen in the field, and has been shown to be safe for consumption and the environment.

PARTNERING FOR DEVELOPING BETTER PRODUCTS FOR INDIAN AGRICULTURE: PRESENT AND FUTURE

Mahyco also has a long track-record of supporting innovative research and initiatives in agriculture. The company has provided support to ICRISAT's pigeon pea hybrid development programme and the consortium for pigeon pea and pearl millet breeding for over a decade. Recently, Mahyco joined the Hybrid Rice Development Consortium (HRDC), a consortium established by IRRI to develop and support hybrid rice research and best practices.

A public-private partnership to transfer Mahyco's Bt brinjal technology to public institutions is underway, with funding from the Agricultural Biotechnology Support Program II (ABSPII). This is collaboration between Mahyco and Tamil Nadu Agricultural University (TNAU), Coimbatore, University of Agricultural Sciences (UAS), Dharwad, Indian Institute of Vegetable Research (IIVR) Varanasi, Bangladesh Agricultural Research Institute (BARI), Lal Teer Seeds, Bangladesh, and University of Philippines, Los Baños (UPLB), Philippines. During the development of this product, Mahyco received support from the Program for Biosafety Studies (PBS) to study baseline susceptibility and genetic diversity in the brinjal fruit and shoot borer.

Mahyco has participated in a number of projects under the aegis of the Department of Biotechnology (DBT), Government of India. A Centre of Excellence project to understand the molecular basis of heterosis in rice in collaboration with the University of Delhi, South Campus (UDSC), is currently active. Under DBT's SBIRI programme, a project on developing virus-resistant cotton is currently being carried out with the Indian Institute of Science (IISc), Bengaluru. Efforts to improve Jatropha seed oil quality and seed quantity, is also supported by a DBT grant. ▶▶

Maharashtra Hybrid Seed Company

▶ Mahyco has also entered into numerous partnerships with public institutions and private companies to bring the best technologies to the Indian farmer. To name a few, Mahyco is sourcing sucking pest tolerance genes from the Bose Institute, Kolkata and chickpea pod borer resistance genes from Assam Agricultural University (AAU), Jorhat, insect resistance genes from IARI and stress tolerance genes from Cornell University. Key crops expressing stress tolerance and nutrient use efficiency genes are in development using technology sourced from Arcadia Biosciences, USA.

ADHERENCE TO INTERNATIONAL QUALITY STANDARDS

Mahyco products are known across the country, and also in other Asian and African countries, for their consistently high quality. The Mahyco logo is the symbol of trust and quality to farmers everywhere. The Mahyco certification represents the largest multi-location certification in India and one of the largest in the world, covering all of Mahyco's different locations under the Multi-location/discipline Registration Scheme, as per the accreditation standards of ANSI-RAB. “Mahyco is an ISO 9001-2000 certified facility and the Quality Assurance seed testing various levels of ISTA certificates for germination, physical purity, moisture among others.”

MAKING A DIFFERENCE IN FARMERS' LIVES

Mahyco's role in the development of the private seed sector has been that of a catalyst in many ways. Taking a leadership position in innovation, and setting new standards in industry practices, has been a hallmark of the company. Building on the legacy of the founder, and keeping its commitment to delivering the best crop products to the Indian farmer, will be Mahyco's focus in the years to come.■

AWARDS FOR EXCELLENCE

Mahyco's role in the development of the private seed sector has been recognized on several occasions over the years:

- In 1989, Mahyco was the first agriculture-based company to receive the prestigious National Award for Research and Development presented by the Indian Ministry of Science and Technology.
- In 1990, Mahyco received awards from the International Seeds and Science Technology (ISST) organization and the Federation of Indian Chambers of Commerce and Industries (FICCI) for noteworthy contributions to the Indian seed industry.
- In 1996, the company's founder and Chairman, Dr B.R. Barwale, was named Honorary Life Member of the International Seed Trade Federation (FIS) for his pivotal role in the development of the private sector seed industry in India, and dedicated service to national and international seed trade organizations.
- In 1997, Mahyco was awarded the ISO-9001 certification for product development, production and processing.
- In 1998, Dr Barwale was honoured with the prestigious World Food Prize, considered the equivalent of the Nobel Prize in agriculture.
- In 2001, Dr Barwale was conferred the “Padma Bhushan” by the President of India in recognition of his services to the country in the agriculture sector.