

## ICRISAT collaboration with the seed industry in Asia

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**A**gricultural research can be made efficient and effective through multidisciplinary and inter-institutional collaboration by teams of scientists from both public and private sectors. In the past, while public sector research played a major role in resource-limited areas and food crops species, the private sector played a major role in more productive areas involving high-value horticultural and commercial crops species. However, that distinction is now becoming blurred, and the scenarios have changed. Returns to research appeared to be higher in marginal areas and that there were complementarities and synergies to be exploited between the public and private sectors in all areas of agricultural research and development.

With rapid developments in agricultural technologies and liberalised national seed policies, the private sector has started investing in hybrid seed research and development, in addition to heavy investments in biotechnology-related research. This paper elucidates the successful partnership between the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the private sector seed industry in Asia as an operational model for public-private partnership that can help national programmes in developing countries to: (a) increase production; (b) improve the livelihood of resource-poor farmers; and (c) at the same time, sustain and enhance business for the private sector.

### What is ICRISAT?

ICRISAT was established in 1972 at Patancheru, near Hyderabad in Andhra Pradesh, India. ICRISAT's major mandate is to improve grain and fodder yields from sorghum, pearl millet, pigeon peas, groundnuts and chickpeas with resistance to biotic and abiotic stresses in the semi-arid tropics. The crop improvement programmes at ICRISAT have developed a diverse range of improved breeding lines, varieties and hybrid parents, which have been shared with national programmes, including those of the private sector. More than 500 varieties and hybrids have been released and marketed in many countries, leading to tremendous impacts being experienced in the form of increased production and enhanced income for farmers.

### Research and development investment

In developing countries, private sector investments in agricultural research and development are concentrated in a few large countries such as Brazil and India. Globally, in 1990, private sector research expenditure was only 1 per cent of public sector research expenditure. Apart from hybrid seeds, the private sector previously did not engage in biological technology. However, with the advent of biotechnology and the broadening of the scope of intellectual property rights to cover life forms, the private sector is becoming a major player.

### ICRISAT and the private sector

ICRISAT's crop improvement research is supported by funds from public and philanthropic donors for producing international public goods, equally accessible to public and private sector institutions. The partnership between ICRISAT

and private sector seed companies has evolved over time. In the early years, ICRISAT played a nurturing role to the fledgling private sector seed industry in India and provided breeding material, often through informal networks.

As the private seed industry grew, it started to develop a significant research capability of its own, particularly in the larger companies. The private sector also became a major channel for delivering ICRISAT-bred parent material as hybrids to farmers. ICRISAT scientists recognised that the Institute's traditional relationship with public sector breeding programmes, although important, was no longer the sole route to farm-level adoption of the hybrids developed based on ICRISAT-bred research products. Since the seed companies have better perceptions of farmers' needs and preferences, the feedback from the private sector, together with those from national agricultural research systems, were useful in defining ICRISAT's future research priorities.

### The consortia approach

The need for additional funds to address vital research gaps encouraged ICRISAT scientists to take advantage of the interaction between ICRISAT and the private sector, nurtured carefully over the years, and to involve them as research partners. Taking into account the immense economic benefits derived from ICRISAT research on hybrid parents as well as the track record of ICRISAT scientists in delivering the agreed outputs, a few seed companies came forward to join as partners. Realising that each partner would contribute small amounts of funds, ICRISAT initiated the concept of "consortia", under which a consortium member provides a grant of US\$ 5,000 per year-1 for a five-year timeframe. The number of companies in the consortia increased from seven in 2000 to 14 in 2003 for sorghum, and from nine in 2000 to 16 in 2003 for pearl millet, with 10 companies being common in both consortia. The funds generated for research in 2003 amounted to US\$ 70,000 for sorghum and US\$ 80,000 for pearl millet consortia.

The consortium approach concept for public-private partnership research is a novel institutional-building approach, and has received wide appreciation from private sector seed companies and the Consultative Group on International Agricultural Research.

### About the Authors

Dr. C.L.L. Gowda heads the team of authors of this paper. Dr. Gowda is also ICRISAT's Global Team Leader on Crop Improvement. Also in the group are KN Rai and Belum VS Reddy who are both Special Projects Scientists (Breeding), and KB Saxena who is a Principal Scientist. The group has been active in research and development of a diverse range of improved breeding lines.

Dr. Reddy will be the Speaker for this topic at the Asian Congress in Seoul.