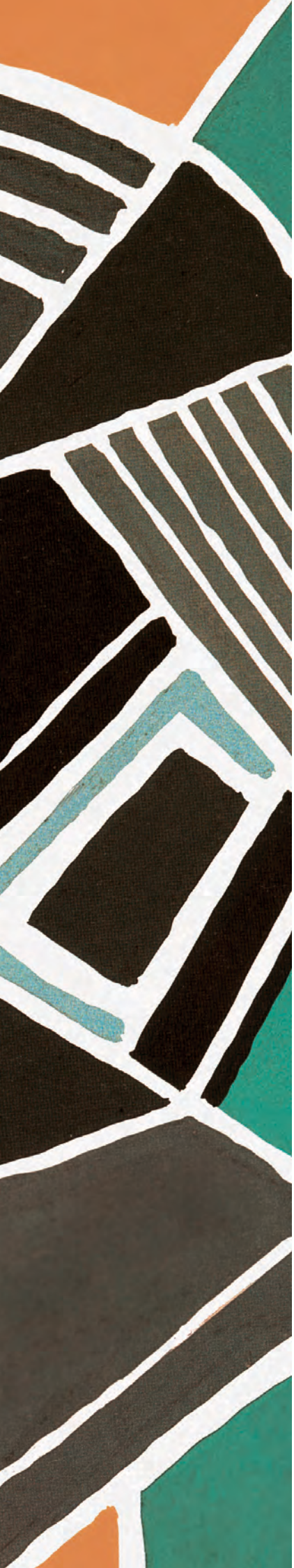

ICRISAT AND CO.

The CGIAR Centre in India

ADARSA
Alliance for Democratising
Agricultural Research in South Asia

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International Institute
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and Development

2014

Shalini Bhutani

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List of abbreviations

A3P	Accelerated Pulses Production Programme
ABI	Agri Business Incubator
ADARSA	Alliance for Democratising Agricultural Research in South Asia
AIP	Agribusiness and Innovation Platform
APAARI	Asia Pacific Association of Agricultural Research Institutes
ASP	Agri-Science Park
BMGF	Bill and Melinda Gates Foundation
BPD	Business Planning and Development Unit
CAS-IP	Central Advisory Service on Intellectual Property
CGIAR	Consultative Group on International Agricultural Research
CIMMYT	International Maize and Wheat Improvement Center
DBT	Department of Biotechnology
GE/GM	Genetic Engineering/Genetically Modified
GEAC	Genetic Engineering Appraisal Committee
GR	Green Revolution
EPMR	External Programme and Management Review
EPR	External Programme Review
FAO	Food and Agriculture Organisation
FSS	Farm-saved seed
GoI	(Union) Government of India
HPRC	Hybrid Parents Research Consortium
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development
IARC	International agricultural research centre
ICAR	Indian Council of Agricultural Research
IFAD	International Fund for Agricultural Development

IIED	International Institute for Environment and Development
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IMOD	Inclusive Market-Oriented Development
IP	Intellectual Property
IPG	International Public Good
IPR	Intellectual Property Rights
IRRI	International Rice Research Institute
JAU	Junagadh Agricultural University
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
MTA	Material Transfer Agreement
NARES	National Agricultural Research and Extension Systems
NARIs	National Agricultural Research Institutes
NARS	National Agricultural Research Systems
NBA	National Biodiversity Authority
NFSM	National Food Security Mission
NOC	No Objection Certificate
PARS	Private agricultural research systems
PGR	Plant Genetic Resources
PPP	Public-private partnership
PTTC	Platform for Translational Research on Transgenic Crops
PVP	Plant variety protection
R&D	Research and development
SA	South Asian
SAT	Semi-Arid Tropics
SAU	State agricultural university
SMTA	Standard Material Transfer Agreement
SSA	Sub-Saharan Africa
SGSV	Svalbard Global Seed Vault
USAID	United States Agency for International Development
WTO	World Trade Organisation

Contents

1. Introduction

Agricultural research and development (R&D), particularly in the public sector, has the potential to improve conditions for people and the planet by supporting sustainable food and farm systems. Yet its capacity to deal with current and future challenges in smallholder agriculture is increasingly being questioned by civil society (Bhutani, 2013).

Part of this questioning includes a critical look at the specific role of the international agricultural R&D centres, such as the Consultative Group on International Agricultural Research (CGIAR; Box 1). While the CGIAR system as a whole has undergone change, individual CGIAR Centres have also been changing their internal policies and research foci and are increasingly forging new relationships with the private sector. One of the CGIAR Centres – the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) – has in a sense led the pack in this shift, prompting other CGIAR Centres, as well as various national agricultural research institutes (NARIs), to follow suit.

This paper takes a close look at the aims and ambitions of ICRISAT, and asks whether its focus on links with the private sector and on the commercialisation of smallholder farming is helping to promote sustainable smallholder agriculture and food security. The paper has been commissioned by ADARSA (the Alliance for Democratising Agricultural Research in South Asia; Box 2), whose members were keen to understand the work of the CGIAR, particularly the CGIAR Centres based in Asia. ADARSA's focus is wholly on smallholder farming in the South Asian (SA) region. Its paradigm promotes smallholder-friendly agricultural R&D that supports the region's holistic, low-cost, integrated agriculture. It is ADARSA's contention that formal agricultural R&D appears to be locked in another paradigm.

There are five CGIAR Centres in Asia, but the two most obviously relevant to ADARSA and its partners are ICRISAT and the International Rice Research Institute (IRRI);[1] their mandate crops (sorghum, pearl millet, finger millet, groundnut, pigeon pea, chick pea and rice respectively) are crucial to food security for a large proportion of India's population. The focus of this paper is on ICRISAT, which has had its headquarters in India for the last 40

Box 1. The vision for the reformed CGIAR

CGIAR (formerly the Consultative Group on International Agricultural Research) is an international organisation which funds and co-ordinates research into agricultural crop breeding to "Reduce poverty and hunger, improve human health and nutrition, and enhance ecosystem resilience through high-quality international agricultural research, partnership and leadership" (CGIAR, 2011).

It does this through a network of 15 Research Centres known as the CGIAR Consortium of International Agricultural Research Centers. These research centers are spread around the globe, with most centres located in the Global South, at Vavilov Centres of agricultural crop genetic diversity. CGIAR Research Centres are generally run in partnership with other organisations, including national and regional agricultural research institutes, civil society organisations, academia, and the private sector.

CGIAR is unusual in that it is not part of an international political institution such as the United Nations or the World Bank; it is an ad-hoc organisation which receives funds from its members. The membership of CGIAR includes country governments, institutions, and philanthropic foundations.

Source: Wikipedia and CGIAR, 2011

[1]Civil society, farmers' groups and NGOs did their own assessment of IRRI's performance in 2010 when it turned 50 (GRAIN, 2010).

Box 2: About ADARSA

The Alliance for Democratising Agricultural Research in South Asia (ADARSA) brings together groups working for farmer-led farmer-oriented agriculture. It includes the Unity Service Cooperation (USC) in Nepal, the Green Movement and MONLAR in Sri Lanka, and UBINIG and Nayakrushi Andolan in Bangladesh. ADARSA is co-ordinated by the Deccan Development Society (DDS), a civil society organisation that has been working with *dalit* women farmers in Andhra Pradesh for the last 25 years.

Key components of ADARSA's work include commissioning research in Nepal and India on agricultural research, and setting up a similar process in Sri Lanka and Bangladesh. Furthermore, ADARSA has facilitated discussions between farmers and scientists in these countries.

In its host country, India, ADARSA has conducted farmer-scientist dialogues on the management of livestock and dryland pastures. ADARSA also conducted a citizens' jury, called a *Raita Teerpu* (literally 'people's verdict') in Karnataka in December 2009: (see Annex VII).

ADARSA is also part of an international initiative called *Democratising Food and Agricultural Research*. Launched in 2007 by partners in South and West Asia, the Andean region of Latin America, West Africa, and Europe, this multi-regional initiative uses a decentralised and bottom-up process to enable small-scale farmers and other citizens to (a) decide what type of agricultural research needs to be done to ensure peoples' right to food; and (b) influence and transform agricultural research policies and practices for food sovereignty (www.excludedvoices.org). This paper is one product of this initiative.

Ending pessimism in the tropical drylands

Dryland agriculture has long been viewed with pessimism and hopelessness. Tropical dryland areas are usually seen as resource-poor and perennially beset by shocks such as drought, trapping dryland communities in poverty and hunger and dependent on external aid. ICRISAT challenges this pessimistic view. Working with diverse partners in Asia and sub-Saharan Africa for almost four decades, ICRISAT has found that dryland farmers are ingenious and resourceful. By applying scientific innovations backed up with adequate policy marketing and other support services, they are able to increase their crop productivity and incomes by several-fold, while improving the resilience of their lands and livelihoods. Hence, prosperity can be brought about in the tropical drylands. Hope should reign instead of pessimism. This is the overarching theme of ICRISAT's new strategic plan for the next decade.

Vision, mission and approach

ICRISAT envisions ***"a prosperous, food-secure and resilient dryland tropics."*** This will be relentlessly pursued through its mission, which is to ***"reduce poverty, hunger, malnutrition and environmental degradation in the dryland tropics."***

To achieve the foregoing, ICRISAT will adopt a partnership-based international agricultural research-for-development approach embodying science with a human face.

Aspirational targets

ICRISAT and its partners have set four bold targets to 2020 that will enormously benefit the well-being of the dryland's poorest people

- Help halve rural poverty by increasing farm incomes through more productive, stable, diverse and profitable crops and crop products,
- Help halve hunger by contributing innovations that increase yields by 30% on a wide scale and through policy advice that stabilizes food prices and availability,
- Help halve childhood malnutrition by enhancing the nutrient content of staple food crops and helping the poor diversity their crops, delivering more nutritious and safer food, and
- Increase resilience of dryland farming through innovations that stabilize, safeguard and enhance natural resource capital, biological and systems diversity, and land health.

our vision prosperous, food-secure and resilient dryland tropics our mission to reduce poverty, hunger, malnutrition and environmental degradation in the dryland tropics our approach partnership based international agricultural research-for-development that embodies science with a human face

ICRISAT's Vision, Mission and Approach • Source: ICRISAT

years (Box 3). Its 40th anniversary in 2012 seemed a good time to explore how it has been addressing the needs of the semi-arid tropics (SAT) in its host country and how its work in India has implications for other countries in the region.

ADARSA, particularly in India, is aware of the changes in ICRISAT, but needed all of the developments relevant to its membership to be captured in one document. Accordingly, this paper was conceived as a presentation of ICRISAT, with an update on what it does today. It is primarily directed at the ADARSA audience, including those both in and outside its networks working on smallholder farming. It is also meant for sharing elsewhere in Asia, where recent years have seen much mobilisation against IRRI and an increasingly sharp critique of the CGIAR. And as ICRISAT steps up its work in Africa (see Chapter 5), the paper will be of vital interest to those working with small farmers in African countries too.[2]

[2] See also Bhutani, S. Forthcoming. Planting India in Africa. IIED, London.

Box 3: The "who" and "how" of ICRISAT

In addition to its Indian headquarters, ICRISAT has two regional hubs (in Nairobi, Kenya and Bamako, Mali) and four country offices (in Malawi, Niger, Nigeria and Zimbabwe) in Sub-Saharan Africa (SSA).

ICRISAT also maintains an office in Delhi to liaise between ICRISAT and the ministries and agencies of India's central government, provides a channel to donor offices, liaises with sister CGIAR Centres, and organises travel, meetings and conferences. It is housed in a purpose-built facility for international agencies.

Research approach

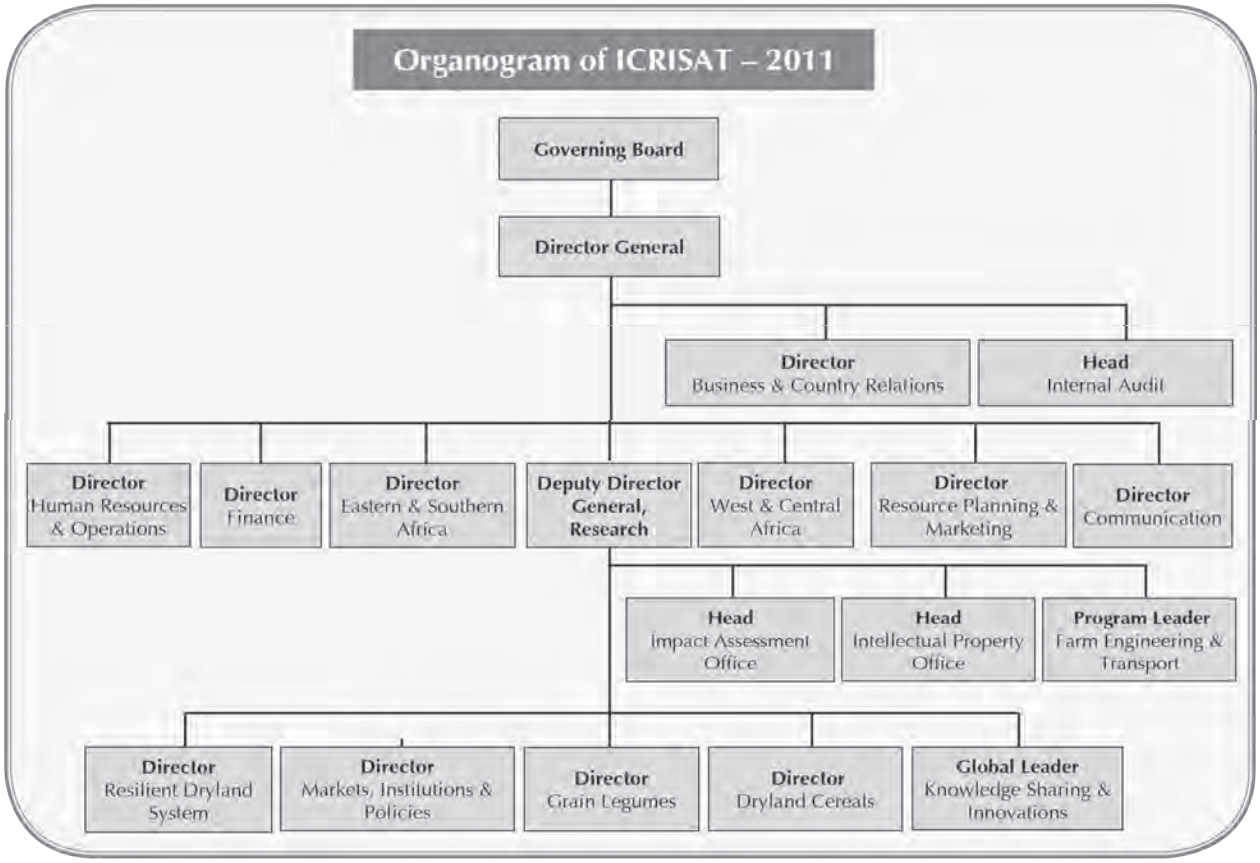
The data and information for this paper were gathered over the course of 2012. The research included a visit to ICRISAT in June 2012 to meet with senior staff (see Annex VIII for details). This also gave the author an insight into the workings of the gene bank with the kind co-operation of the gene bank's head.

The author also had an interaction with those handling both the Platform for Translational Research on Transgenic Crops (PTTC) and the Agribusiness and Innovation Platform (AIP). The Deputy Manager of the Agri-Business Incubation (ABI) Programme explained the workings of the ABI programme.

Speaking with former staff of ICRISAT (including Dr Michel Pimbert, and others who have chosen to stay anonymous), greatly helped to put current changes in perspective.

The author also contacted specialists in Africa for their views, including the African participants of the January 2012 Afro Asian Conclave organised by Southern Action on Genetic Engineering (SAGE), at the National Institute for Rural Development (NIRD) in Hyderabad, India. Discussions nevertheless focused mainly on understanding ICRISAT's activities in India.

The research included tracking ICRISAT's activities during 2012 and 2013 through reading media reports, ICRISAT press releases, publications and promotional materials. In order to learn more about ICRISAT's collaboration with Indian NARIs, Right to Information[3] applications needed to be filed with the agricultural departments in relevant states of India.



Source: ICRISAT

[3] A requirement under India's Right to Information Act, 2005 http://rti.gov.in/

40 Years of ICRISAT • Photo credit: Shalini Bhutani

ICRISAT's own materials have been an important source of information for piecing this research work together. Its Open Access Repository was very useful in this regard.[4] The Centre's External Programme and Management Review (EPMR) and External Programme Review (EPR) reports helped to trace changes within the organisation. ICRISAT's vision statements and annual reports also gave an insight into how the Centre is both changing and responding to change.

Since ICRISAT is part of the CGIAR Consortium it was also important to understand the CGIAR in general, especially:

- the CGIAR's Intellectual Assets Principles
- the new business model of the CGIAR Consortium
- the United Nations (UN) Food and Agriculture Organisation (FAO) system of germplasm exchange through the gene banks of international agricultural research centres
- the International Treaty on Plant Genetic Resources for Food and Agriculture and its relation with the CGIAR Centres.

[4] See http://oar.icrisat.org/

2. The beginnings

ICRISAT was founded in India in 1972 as an agricultural research organisation with the mission to "reduce poverty, hunger, malnutrition and environmental degradation in the dryland tropics" (ICRISAT, undated).

It was set up on 1,394 hectares of land in Andhra Pradesh lent to ICRISAT by the Indian government for 99 years (Box 4). This entailed the resettlement of the several hundred people who were living there, including the two main villages of Kachireddipalli and Manmool. Much pains are taken in ICRISAT literature to emphasise that the moving of the villagers was painless and "smooth" (ICRISAT, 2002).[5]

The first Director of ICRISAT from 1972 to 1977 was Dr Ralph W Cummings, previously of the Ford Foundation, Rockefeller Foundation, USAID and World Bank. Prior to his ICRISAT post he was heading IRRI – the first CG Centre set up in Asia (in the Philippines).

Like IRRI, ICRISAT has received considerable help from its host country since its creation, and India has been amongst its top core donors since 2009 (Table 1). Testimony to this strong support was the speed and lack of bureaucratic delays with which it was set up. The Centre's foundation stone was laid on 11 January 1975 by the then Prime Minister of India, Mrs Indira Gandhi. Its new campus was inaugurated in 1979, again by the Indian Prime Minister of the day, Mr Charan Singh.

The Director General of the Indian Council of Agricultural Research (ICAR) at the time – Dr M S Swaminathan, better known as the father of the Green Revolution in India[6] – was actively involved in setting up ICRISAT, and was subsequently a Trustee of the ICRISAT Board from 1972-1980. His organisation – the M S Swaminathan Research Foundation – and ICRISAT were R&D partners for over a decade afterwards.

Table 1. ICRISAT's grant income from India, 2008-2012

Year	Amount in USD '000
2012	5677
2011	7578
2010	7073
2009	5168
2008	4661

Source: Compiled by author from data on ICRISAT website

Subsequent DGs of ICAR, such as Dr R S Paroda, also played a major role in garnering financial and other support for ICRISAT from the Indian government. Today both Dr Paroda and Dr Swaminathan hold prominent positions in national and international agricultural R&D work. For instance, Dr Paroda is the long-standing head of the Asia Pacific Association of Agricultural Research Institutes (APAARI), of which ICRISAT is an associate member.[7]

Three other trustees – the Cabinet Secretary to the Government of India, the Chief Secretary to the Government of Andhra Pradesh and the Director General of ICAR – are *ex officio* on the ICRISAT Governing Board. The inclusion of

[5]There is little trace of first-hand accounts from the families and communities who needed to move to make way for ICRISAT.

[6]The birthplace of the Asian 'Green Revolution' was another CGIAR Centre – the International Rice Research Institute in The Philippines; see PAN AP (2011).

[7]For a list of APAARI Members see www.apaari.org/about/members.

these prominent Indian representatives is to ensure that ICRISAT's work is responsive to the host country and immersed in its local realities, so that India's farming community is able to derive maximum benefit from its presence.

Despite its long presence in the southern Indian state of Andhra Pradesh, not much is publicly known about ICRISAT in India, particularly by those outside the formal agricultural research sector, nor by those in other countries of the SAT. This was echoed by participants at African events to mark ICRISAT's 40th anniversary, who felt *"that the organisation is not as visible as it ought to be in the public eye and that more could be done to make its presence felt not only in Zimbabwe but within the region given its strategic role in agricultural development"* (Kudita, 2012). More important than knowing that it exists, is knowing what it really does, and especially if and how it makes a difference to the small farmers in the SAT regions of SA and SSA whom it purports to serve.

Box 4: Outside the walls of ICRISAT: Andhra Pradesh

ICRISAT is headquartered in Patancheru near Hyderabad, Andhra Pradesh in South India. ADARSA also has its secretariat in Hyderabad. Its member farmers are well-placed to trace ICRISAT's research trajectory and its impacts on local lives.

The state is primarily agricultural and is India's fourth largest by area and fifth largest in terms of population. More than 70% of its population live in rural areas, over 50% of which are farmed without irrigation. The state has some local problems: it comes third on the all-India list of farmer suicides. The Government of India's own figures reveal that between 1995 and 2010, a total of 31,120 farmers committed suicide in the state.[8] 2012 showed an upward surge in the trend with the state logging 2,572 farm suicides – 366 more than the previous year (Sainath, 2013). Multiple reasons for farmers' despair include drought conditions, crop failures, a low government minimum support price from, indebtedness, lock-in to cash crops such as cotton, and limited support for the more resilient multi-cropping that farmers want to pursue.

Andhra Pradesh is also the state at the heart of the Bt cotton controversy (Kuruganti, 2009; Pearson, 2006). Political unrest is a constant feature in the state. And public opinion is very much against the mainstream agricultural policies that the state government pursues, in terms of how they should be oriented and whose needs they should primarily fulfil.

Within its walls, ICRISAT may not feel the heat of these local issues. While it might be appropriate for ICRISAT to stay out of state politics, many small farmers are unaware of it or its mandate.

As explained by some of its senior staff, ICRISAT has now begun to "move out of its periphery" much more to work with national partners.[9] In 2011, the Andhra Pradesh state government launched the Bhoochetana (soil/land awareness) project, in partnership with ICRISAT and other organisations. This began on 70 000 hectares of smallholder farmers' fields in seven districts and allows for greater dissemination of ICRISAT's research outputs (Wani, 2013). Nonetheless, with its early focus on village-level studies it has vast data on small farm agriculture and its challenges.

[8] Source: National Crime Record Bureau http://ncrb.nic.in/

[9] In conversation with the author at ICRISAT in June 2012.

3. Cultural change

> "Publicly funded agricultural research has declined by over 50% during the past 15 years. An increasing share of agricultural research and ownership of new technologies has moved to the private sector. Environmental considerations are being increasingly integrated into international development policy. Thus, ICRISAT's *modus operandum* is changing to function more effectively and efficiently in this new environment. ICRISAT recognises that opportunities for productivity increases in the SAT will be firmly anchored on integrated genetic and natural resource management strategies and improved delivery systems. It also recognises that impact can be achieved through strengthened and diversified partnerships, including those with the private sector."
>
> *(ICRISAT, 2001)*

This quote – taken from ICRISAT's Vision and Strategy to 2010 – defines some of the factors behind the changing face of agricultural research. The environment in which ICRISAT operates has seen drastic change. The establishment of the World Trade Organisation (WTO) in 1995 triggered far-reaching changes in global trade. New trade rules on market access, agricultural commodities and intellectual property have affected how and why agricultural R&D is conducted. These rules also pose many challenges to smallholder agriculture. With trade being seen as an essential means for development,[10] agriculture is being opened up to the global market. The seed and agrichemical corporations who supported these changes in the world trading system are playing a more decisive role in CGIAR Centres.

While the architecture of agricultural R&D has been changing the world over, the internal architecture of ICRISAT has also undergone change, partly as a reflection of the times and partly to justify its own continuance. The process of internal change has dovetailed with the CGIAR's own change management process, which was launched in 2008. In that year the CGIAR took a decision to adopt a new business model.[11] ICRISAT's business plan for 2011-2015 states that "(c)ultural change (at ICRISAT) will be institutionalised..." (ICRISAT, 2010b). The change is perhaps best described in the words of the 'New Vision' statement for ICRISAT (which responds to the recommendations of the 4th EPMR): "The overreaching principle is that ICRISAT must operate as an efficient business (sic)" (Barghouti, 1998). The EPMR itself has been regarded by the CGIAR's Science Council as the main instrument to assess a CG Centre's quality and relevance of research and its general impact on development goals.[12]

Funding changes

In 1995, ICRISAT fell short of its target budget by nearly USD 1.3 million.[13] In 1998 Dr Shawki M. Barghouti, the then DG, stated that "ICRISAT today is akin to a ship with a broken engine being steered in muddy waters where the going is certainly not easy" (cited

[10] For example, see the WTO Trade and Development website at www.wto.org/english/tratop_e/devel_e/devel_e.htm

[11] For more details see the page on CGIAR reform at www.cgiar.org/who-we-are/history-of-cgiar/cgiar-reform/

[12] The EPMR is conducted every five years by scientific peers of the CGIAR system, rather than professional evaluators. It is conducted by a chaired panel of members, all of whom are regarded as having expertise in a specific area of research as well as an overview of the CGIAR's role in international agricultural R&D.

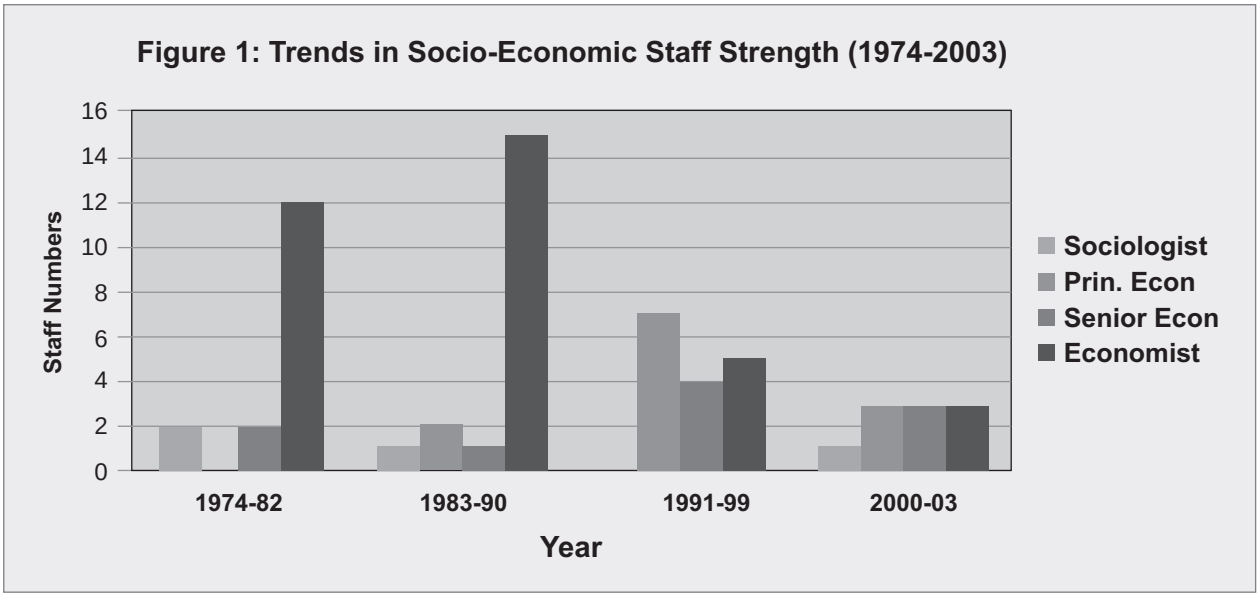
[13] ICRISAT Annual Report 1995.

in Bagla, 1998). In 2002 ICRISAT's funding declined from USD 30 million to USD 21 million (at a time when CGIAR system-wide revenues had increased slightly) and staff were reduced from 1,345 to 816 (see Figure 1 for details on socio-economic staff trends).There has been a general trend of declining public funding for agricultural research. Moreover, agricultural R&D done following a global template by the international agriculrural research centres (IARCs) is an expensive affair, which constantly needs to be justified. The funding decline could in part be explained by budgetary constraints of donors themselves, but also by the lack of visible research impacts. Whereas in 1996 ICRISAT ranked third in revenue among the 16 CGIAR Centres, by 2003 it had fallen to eleventh place.[14]

This led to a sizeable down-sizing of staff (Figure 1), and significant changes to research programmes. Fewer resources meant that research projects needed to be consolidated and activities merged. The 12 projects that had been running since 1 January 1997 were consolidated into just 3 research programmes in 1998 (genetic resources and enhancement; natural resources management; socioeconomics and policy) plus an information resource management programme.[15] Stand-alone biodiversity divisions and natural resource management programmes have since been discontinued.

Perhaps the most perceptible shift in ICRISAT has been the change in its funding sources, which in turn are reflected in the Centre's research agendas, staffing profiles and organisational culture. Its public funding has considerably declined. For instance, funding from governments represents a much lower share than before. Development investors such as the African Development Bank and Asian Development Bank have dropped way down the list of donors since the financial crisis. Meanwhile, ICRISAT's top six donors in the last 5-6 years tell the story of its change. Notable among them are the Bill and Melinda Gates Foundation (BMGF), the World Bank and the United States Government (Table 2).

ICRISAT admits that it has had to move to 'non-conventional' funding sources, which include the large multinational corporations and many seed and biotech companies. In this context, in order to survive it has had to become



Source: Alumira, JD., Bantilan, MCS. and Sihoma-Moyo, T. 2005. Evolution of Social Science Research at ICRISAT, and a Case Study in Zimbabwe. Working Paper Series no. 20. Working Paper. International Crops Research Institute for the Semi-Arid Tropics, Bulawayo, Zimbabawe.

[14]Today it ranks sixth amongst the 15 CGIAR Centres, according to data in the CGIAR's Annual Report 2012.

[15]"At the time of the 1990 EPMR, ICRISAT's programme comprised 280 projects. In 1995, these were reduced to 22 global projects, and further reduced to 12 in 1997. The reduction in the number of projects was guided by the need for more focus and integration of related projects." (CGIAR, 2003).

more entrepreneurial with its present and prospective donors and 'clients'. For example, its Hybrid Parent Research Consortium charges for using its hybrid parental materials. It is also seeking to replicate this model elsewhere in countries of the South (for more on this see Chapter 5). The Centre also receives funds from developing countries and non-governmental organisations. But given the ratio of their contributions and the asymmetries in power that exist in the real world, it is unlikely in the present scenario that the balance is tipped in favour of the less powerful.

These shifts have seen ICRISAT's internal culture change. Scientists are expected to find their own research funds; those who win funding get more promotions. There is much more pressure to show research outputs. The CGIAR's new business model is more results oriented.[16] But while (agri)business' results are often measured in terms of increases in agricultural production and marketing opportunities, smallholders need other social, ecological and political results, which go beyond mere economics.

This is best captured in the words of the CGIAR Fund Council Chair Ms Rachel Kyte (who is the Vice President of Sustainable Development at the World Bank) during her visit to ICRISAT in October 2012. As ambassador and champion for the CGIAR, she stressed that while "agriculture is once again on top of the development agenda, donors and funders need to be convinced that investing in agricultural R4D[17] will yield better value for their money and will benefit more people than ever before... We need to better communicate the impacts of investing in R&D with some degree of certainty, on how our research has contributed to increased yields and farm incomes of smallholder farmers and the attainment of food and nutrition security, has reduced the vulnerability of agriculture to climate change, and has built a more sustainable and resilient environment." (ICRISAT, 2009).

Key for Table 2:

▲	CGIAR Consortium, centres & programmes, etc.
☛	Governments
●	Private foundations/trusts
❖	Development organisations
★	Private companies
■	United Nations bodies/adencies
✦	International financial institution/regional bank
❣	Regional NARIS' and related associations

Changes to the ICRISAT's donor profile in part explain the changes in ICRISAT's orientation. The Deputy Director General Research of ICRISAT explains that funding is far more diverse than before and that there is a move away from core funding to bilateral projects (Table 2). Amongst governments, those of the USA and ICRISAT's host country, India, remain amongst the top sources of funds (Table 2 and Figure 2 & 3). Therefore, their policies and positions on agricultural R&D – as those of other powerful governments – have a bearing on the Centre's research priorities, which in turn permeate to other countries in Asia and Africa. Countries like Australia, which also make considerable financial contributions to ICRISAT, constantly have to keep in perspective whether their support for research is going to improve the lives of SAT farmers in the developing world rather than bringing benefits to their own countries. Private seed companies are also now a regular source of income.

Other notable changes are that the BMGF has been the largest donor since 2007 (Figure 2).[18] But the interests of these large corporations and private foundations may not be in line with those of the small farmers

[16]See the CGIAR 2010 webpage, "Changing Times, Time to Change" at www.cgiar.org/web-archives/www-cgiar-org-changemanagement-index-html/

[17]The term AR4D (agricultural research for development) is used to emphasise that agricultural research systems need to function in a way that addresses developmental needs and they need to be committed to action for impacts. For more see IAASTD (2009) and the synthesis report at www.unep.org/dewa/Assessments/Ecosystems/IAASTD/tabid/105853/Default.aspx

[18]See the BMGF site: Awarded Grants to ICRISAT at www.gatesfoundation.org/How-We-Work/Quick-Links/Grants-Database#q/k=icrisat

Table 2: ICRISAT's grant income from donors (2009-2012)

USD '000 (1USD = 61.86 INR as of 15 February 2014)

	2009	2010	2011	2012
TOP TEN (Highlighted)	● Bill & Melinda Gates Foundation (BMGF) 7,199	● BMGF 10,996	● BMGF 12,488	▲ CGIAR Consortium 25,166
	☛ USA 6,219	☛ USA 10,082	▲ CGIAR Consortium 10,646	● BMGF 12,002
	☛ India 5,168	☛ India 7,037	☛ India 7,578	☛ USA 6,186
	▲ CGIAR Challenge Programme 3,277	▲ CGIAR Challenge Programme 4,124	☛ European Commission 7,431	☛ India 5,677
	✦ World Bank 2,808	☛ United Kingdom 3,920	☛ USA 5,742	▲ CGIAR Challenge Programme 3,359
	☛ United Kingdom 2,729	☛ Norway 2,459	▲ CGIAR Challenge Programme 3,648	☛ European Commission 1,848
	☛ Germany 2,180	☛ European Union 1,942	☛ Germany 2,489	☛ Germany 1,588
	☛ European Union 2,159	☛ Germany 1,832	☛ Australia 1,772	☛ Ireland 1,303
	■ International Fund for Agricultural Development (IFAD) 1,785	☛ Ireland 1,769	▲ CGIAR Consortium Research Centers 1,109	▲ CGIAR Consortium Research Centers 726
	☛ Canada 1,743	✦ World Bank 1,740	☛ Switzerland 1,066	☛ Netherlands 518
	☛ Norway 1,573	☛ Canada 1,619	☛ Ireland 803	● McKnight Foundation 450
	■ United Nations Environment Programme (UNEP) 1,217	☛ Australia 1,345	☛ Belgium 715	☛ Australia 435
	☛ Ireland 1,010	■ IFAD 1,345	★ Private Seed Companies 676	❖ AGRA 407
	☛ Australia 988	■ UNEP 1,025	❖ AGRA 518	▲ Global Crop Diversity Trust 402
	☛ Switzerland 858	☛ Switzerland 891	☛ Netherlands 482	❣ FARA 377
	☛ Belgium 550	▲ CG Centers 663	■ IFAD 476	★ Private Seed Companies 367
	☛ Sweden 533	☛ Netherlands 608	● McKnight Foundation 451	☛ Japan 332
	▲ CG Centers 497	☛ Belgium 602	☛ United Kingdom 413	☛ Philippines 323
	☛ Japan 438	☛ Sweden 553	▲ Global Crop Diversity Trust 394	❣ ASARECA 286
	☛ Netherlands 427	❖ AGRA 496	● Sir Ratan Tata Trust 363	✦ Asian Development Bank 278
	● McKnight Foundation 404	☛ Japan 488	✦ Asian Development Bank 331	☛ Austria 256
	● Sir Ratan Tata Trust 356	★ Private Seed Companies 471	☛ Japan 284	■ IFAD 250
	▲ Global Crop Diversity Trust 351	● McKnight Foundation 456	● Sir Dorabji Tata Trust, India 259	☛ United Kingdom 219
	● Sir Dorabji Tata Trust, India 306	❣ ASARECA 393	■ FAO 259	● Sir Ratan Tata Trust 205
	■ Food and Agriculture Organisation (FAO) 291	▲ Global Crop Diversity Trust 350	■ CFC 256	Other Donors 204
	✦ Asian Development Bank 279	Others 301	☛ Canada 231	● Sir Dorabji Tata Trust 189
	★ Private Seed Companies 212	● Sir Ratan Tata Trust 294	☛ Austria 225	● Navajbai Ratan Tata Trust 178
	■ Common Fund for Commodities (CFC) 161	✦ Asian Development Bank 274	● Navajbai Ratan Tata Trust 210	■ FAO 175
	☛ South Africa 160	❖ World Wide Fund for Nature (WWF) 265	❦ GRM International 197	☛ Canada 132
	Others 150	● Sir Dorabji Tata Trust, India 262	Other Donors 194	■ CFC 121
		☛ Austria 190	❣ ASARECA 184	● Coca Cola India Foundation 76
		■ CFC 190		❖ World Vision 72

	2009	2010	2011	2012
	☛ Italy 147 ❣ Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) 132 ● Navajbai Ratan Tata Trust 126 ● Sehgal Family Foundation 120 ❖ Alliance for a Green Revolution in Africa (AGRA) 118 ☛ France 150 ❖ Plan International 116 ● Kellogg Foundation 109 ☛ Philippines 108 ☛ Mozambique 93 ✦ OPEC Fund for International Development (OFID) 90 ☛ Austria 83 ❣ Biosciences Eastern and Central Africa (BECA) 80 ☛ China 72 ☛ Korea 40 ● SM Sehgal Foundation 39 ● Syngenta Foundation 39 ● Rockefeller Foundation 31 ❖ Aga Khan Foundation 27 ☛ Denmark 25 ☛ Thailand 20 ☛ Iran 5 ☛ Turkey 5	❦ GRM International 160 ■ FAO 132 ☛ France 102 ❖ Kellogg Foundation 87 ✦ OFID 85 ☛ Philippines 70 ❖ Plan International 70 ☛ China 60 ● SM Sehgal Foundation 45 ● Navajbai Ratan Tata Trust 44 ☛ Korea 40 ☛ Denmark 29 ❖ Aga Khan Foundation 28 ☛ Thailand 20 ● Syngenta Foundation 12 ● Sehgal Family Foundation 9 ☛ Turkey 5	☛ Philippines 156 ● Kellogg Foundation 129 ✦ OFID 65 ☛ China 59 ☛ France 58 ☛ Nigeria 49 ■ UNEP 44 International Forum for Agricultural Research (IFAR) 33 ☛ Norway 22 ❖ Aga Khan Foundation 22 ☛ Denmark 12 ☛ Turkey 5	☛ China 40 ☛ Thailand 39 ✦ World Bank 39 ❖ Action Contre la Faim 24 ☛ France 21 ☛ Denmark 10 ☛ Switzerland 8 Care Inc., 7 Institut du Economie Rurale (IER) 7 ❖ Aga Khan Foundation 7
	GRAND TOTAL 47771	59980	62544	64309

Source: Compiled by the author from information on the ICRISAT website (www.icrisat.org/grant-income2011.htm)

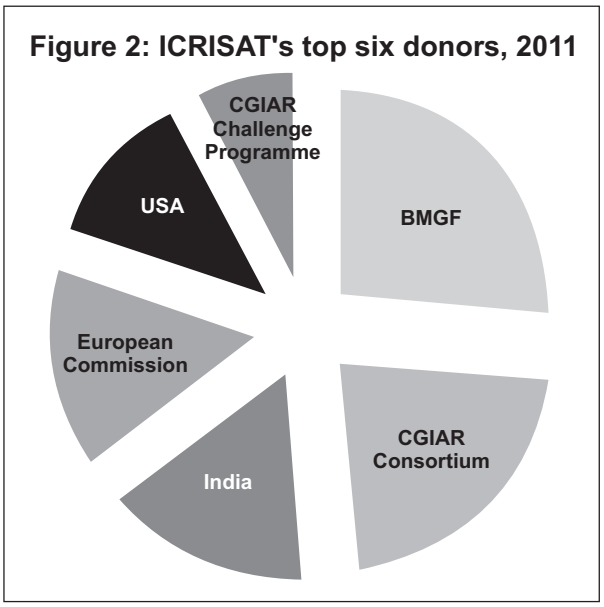


Figure 2: ICRISAT's Top Six Donors 2011.
(Source: ICRISAT Annual Report 2012)

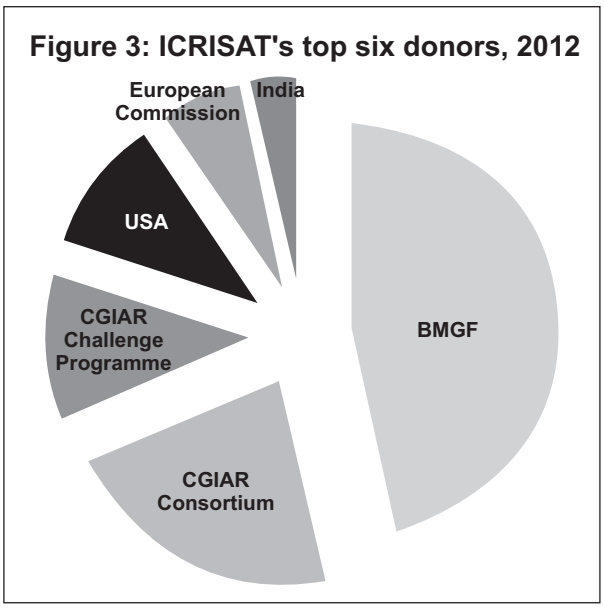


Figure 3: ICRISAT's Top Six Donors 2012.
(Source: Compiled by author from data on ICRISAT website)

they seek to support. These 'non traditional' funding sources can have a direct bearing on agenda-setting for R&D at ICRISAT, both in terms of its architecture and policies. As their relative contributions increase their financial clout, they can come to disproportionately influence the politics of research. It places them in a strong position relative to civil society, drowning out the voices of the intended beneficiaries – the small farmers. Civil society also worries about the lack of transparency in such grant-making. The dominance of BMGF in the health sector (particularly malaria research) is an indication of this and how it can stifle the diversity of scientists' views (Anderson, 2011).

The financial crisis in part also explains what ICRISAT's campus looks like today and who operates from there. When ICRISAT shed many of its scientific staff, it decided to let out its empty office space to other organisations. This led in 2006 to the Asian Vegetable Research Development Centre establishing its South Asia regional office on the campus. The World Vegetable Center is a non-profit, autonomous

Bill Gates at ICRISAT in June 2013 • Source: www.thegatesnotes.com

international agricultural research centre with headquarters in Taiwan and regional offices around the globe. The two international centres not only share space on campus but also share staff. Since then, ICRISAT has rented facilities to non-governmental organisations like the World Wide Fund for Nature (WWF) and the private sector. This has been an important way for ICRISAT to strengthen its relations with private companies, both big and small. By letting out its premises it has helped to 'incubate' other research while also bringing in money (from rent) and building new partnerships (through PPPs).

Market orientation

The most perceptible change in ICRISAT is its shift in focus towards agribusiness.

From assisting start-ups selling jasmine flowers[19] to incubating seed companies licensing Monsanto's Bt cotton (Box 5), ICRISAT's incubator services have helped establish several big and small agribusiness enterprises.

In 2003, ICRISAT signed a memorandum of understanding with Genome Valley-Hyderabad and the Government of Andhra Pradesh, to promote an agri-biotech venue at the Centre's Patancheru campus – the Agri-Science Park (ASP).[20] The intent was to let out its space to global agri-biotech companies, corporations and foundations to establish their R&D units.[21] This has become ICRISAT's hub for public-private partnerships. The Agri-Science Park's integrated Strategic Business Units (SBUs) include:

- Ag-biotech Innovation Centre
- Agri-Business Incubator
- Hybrid Parents Research Consortium
- Bio-products Research Consortium
- NutriPlus Knowledge Center
- SAT Eco - Venture

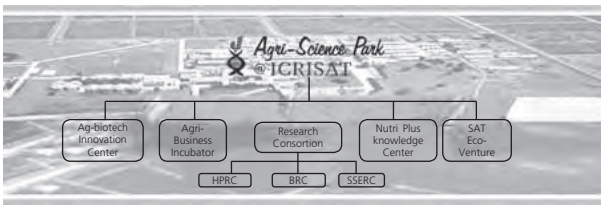
The Agri-Business Incubator (ABI) has helped launch several ventures specialising in seed, biofuels, technical innovation, farm set-ups and agribiotech. It functions as a business, earning either by taking equity shares in the ventures it incubates, or by charging fees (for rent, royalties, and other services).

ABI is part of the Network of Indian Agri-Business Incubators (NIABI), an initiative under ICAR's National Agricultural Innovation Project funded by the World Bank. NIABI's mission is "to enhance agri-business development and impacts on agriculture through co-business incubation".[22] Its associates include the Federation of Indian Chambers of Commerce and Industry – the voice of India's business and industry – and the Confederation of Indian Industry. The second global conference on agribusiness incubation was organised by ICRISAT at the Indian Agricultural Research Institute, New Delhi in February 2012.[23] The National Agricultural Innovation Project has entrusted ABI-ICRISAT with handholding and mentoring ICAR's Business

Box 5: ICRISAT's role in Bt Cotton in India

In 2003, client Bioseed Research India, a subsidiary company of DCM Shriram Consolidated Ltd., licensed Bt gene technology from the infamous US multinational Monsanto Inc. to develop and commercialise insect-resistant cotton varieties. ABI provided Bioseed with training in Bt breeding techniques, biosafety consultancy, and lab and greenhouse facilities. These services helped the mid-level seed company to enter the high-end seed business early and gain a strong market share in the Indian market for Bt cotton seed. The incubation service benefited from commercialisation of Bioseed's Bt technology. About 525,000 packets of Bt cotton seed have been sold during the past two years in India. The company's varieties are grown by 200,000 farmers on 202,343 hectares.

Source: ABI-ICRISAT



Source: ICRISAT

[19] See ICRISAT Happenings webpage at www.icrisat.org/newsroom/latest-news/happenings/happenings1508.htm#4, accessed 7 January 2014.
[20] For more see www.agri-sciencepark.icrisat.org.
[21] ICRISAT Press Release 2003 http://www.icrisat.org/newsroom/news-releases/icrisat-pr-2003-media1.html
[22] See the NIABI webpage at www.niabi.in/niabi//node/34
[23] For full conference report see http://www.niabi.in/niabi/niabi2012/images/niabi2012_report.pdf

Planning and Development Units in its research institutes and state agriculture universities (see Annex VI).[24]

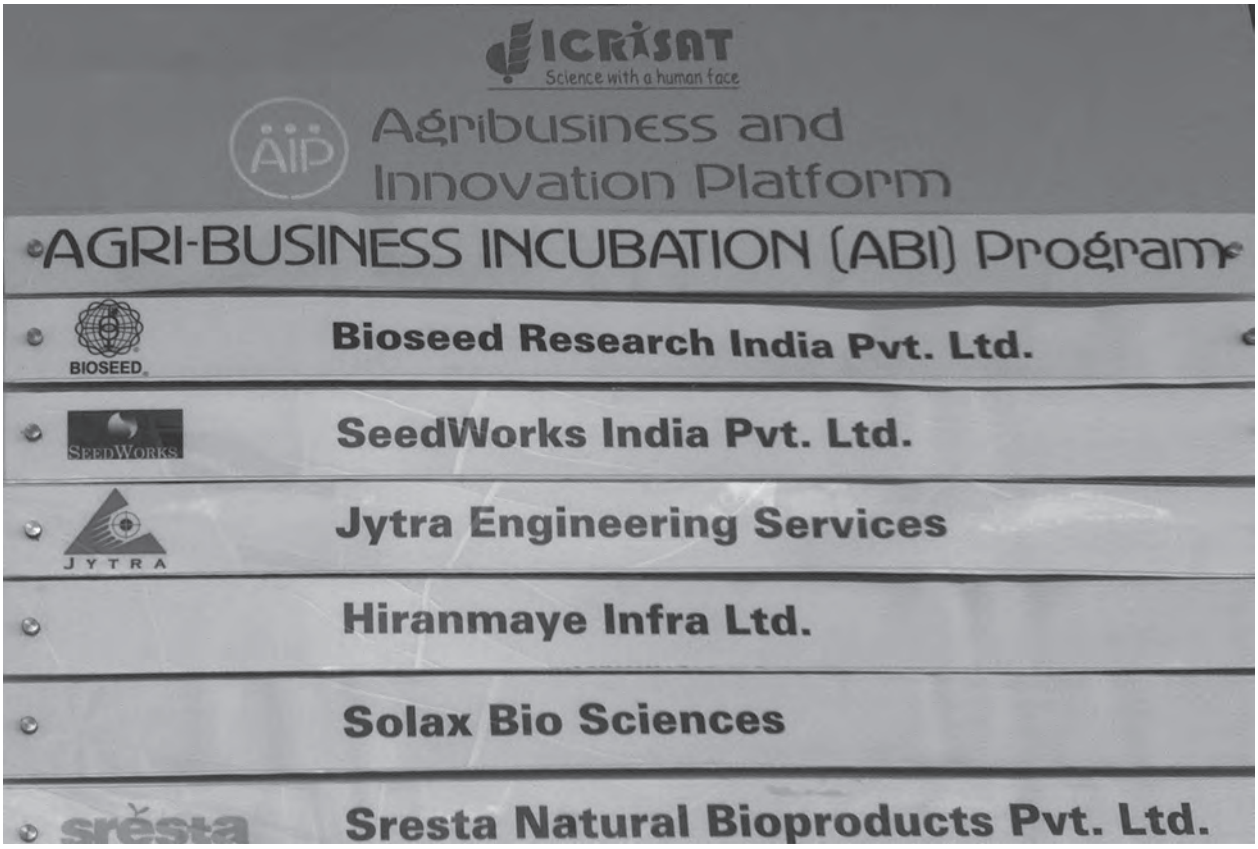
Diverse agri-based enterprises have also been helped by the Agribusiness and Innovation Platform. For instance, the first ever private sector seed bank in India is on its way with the signing of a memorandum of agreement in 2012 between ICRISAT and Gubba Cold Storage Ltd. ICRISAT will help Gubba establish a state-of-the-art seed bank, providing training to its staff on seed handling and management, and on-site consultancy and advice on infrastructure.[25]

The 6th EPMR of ICRISAT points to problems with Agri-Science Park, however, including scale and transparency: "As ASP has grown, the efforts to tie projects to ICRISAT's mission and priorities show signs of strain. From the initial partnerships with seed companies and applied research, ICRISAT's partnerships with the private sector now encompass initiatives with much weaker links to its mission, among them a business incubator, complete with technical assistance on managing start-up companies, a potential tourism activity, albeit with agricultural and environmental overtones, and a consultant service for putting the ASP model in place elsewhere" (CGIAR, 2009).

Over the past few years, even though core funding for ICRISAT has been falling, ICRISAT has been able to continue its needs-based, critical research in crop improvement due to additional support from the private seed companies.

Incubating growth, not security?

ICRISAT's version of market linkage – the Inclusive Market-Oriented Development (IMOD) – is the conceptual model designed to guide ICRISAT in its next 10 years. This approach is premised on turning subsistence cultivators into surplus producers by linking them up with global agricultural markets. ICRISAT's newer partners – the many seed companies and agribusiness enterprises it incubates – would logically seek these small-

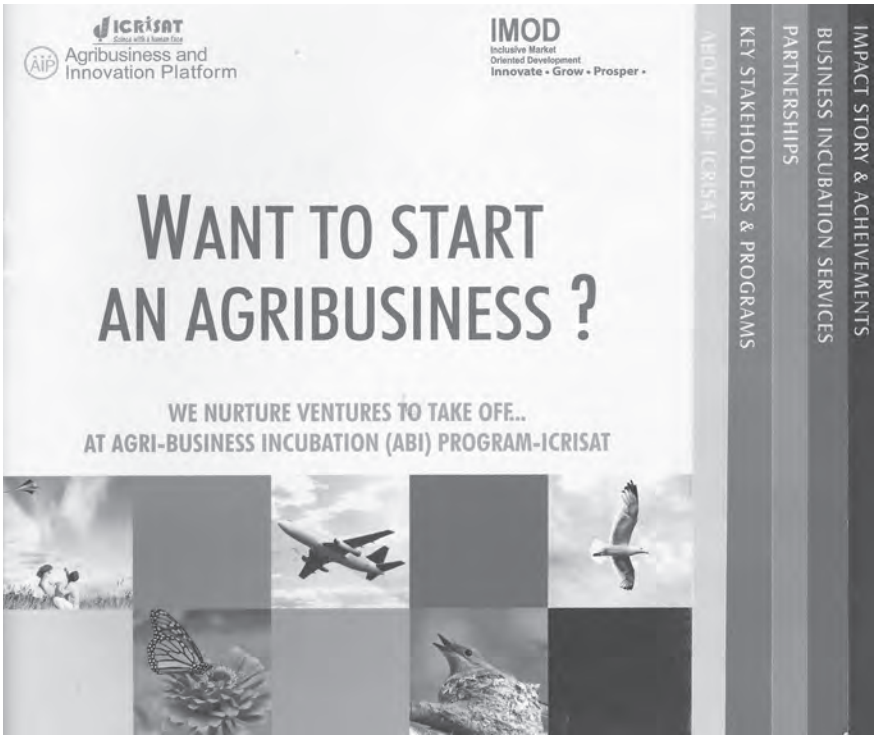


AIP-ICRISAT • Photo credit: Shalini Bhutani

[24]Source: ICRISAT Brochure on NIABI

[25]See the ICRISAT Happenings webpage at www.icrisat.org/newsroom/latest-news/happenings/happenings1550.htm#6

holders as consumers of their products and services. IMOD seems to pursue the market with evangelical zeal, ignoring its imperfections and the imbalances in global agricultural trade, which are tilted in favour of big business. In the DG's words, "IMOD has changed the static thinking. IMOD is a process of movement along a development pathway from impoverished subsistence farming, to prosperous market-oriented farming" (ICRISAT, 2013).



ICRISAT's IMOD Brochure •Source: ICRISAT

But the relevance of this approach for SAT smallholders is open to debate. There is little room in such a system for smallholders' own preferences or for those who do not wish to be integrated into the global supply chain. When queried about how IMOD will help dryland farmers, senior ICRISAT staff are quick to reply that "farming is a business".[26] They are also quick to point to the shift in CGIAR's thinking from (mere) food security to economic growth.

This is despite the fact that the 'new' CGIAR consortium has redefined its work towards four system-level outcomes (CGIAR, 2011):

1. Less rural poverty
2. Better food security
3. Better nutrition and health
4. Sustainably managed resources

Against this backdrop ICRISAT has set four bold aspirational targets to 2020, including halving rural poverty, hunger and childhood malnutrition and increasing the resilience of dryland farming. Yet its IMOD approach relies much too heavily on the large private sector and the market, which are not necessarily oriented towards ensuring food security, nutrition and health. In doing so it might be placing undue importance on aligning its research to the market rather than to the small farmer.

ICRISAT is best described today by its AIP mantra: enhancing R&D through agribusiness. This explains the company it keeps. Its own campus houses several big and small biotechnology corporations, seed companies and business entrepreneurs (in addition to not-for profit research and development organisations). The Centre is visibly working more with the private agricultural research systems (PARS). It appears to have set the trend in a new market determinism of agricultural R&D.

[26]In conversation with the author at ICRISAT in June 2012.

4. ICRISAT today

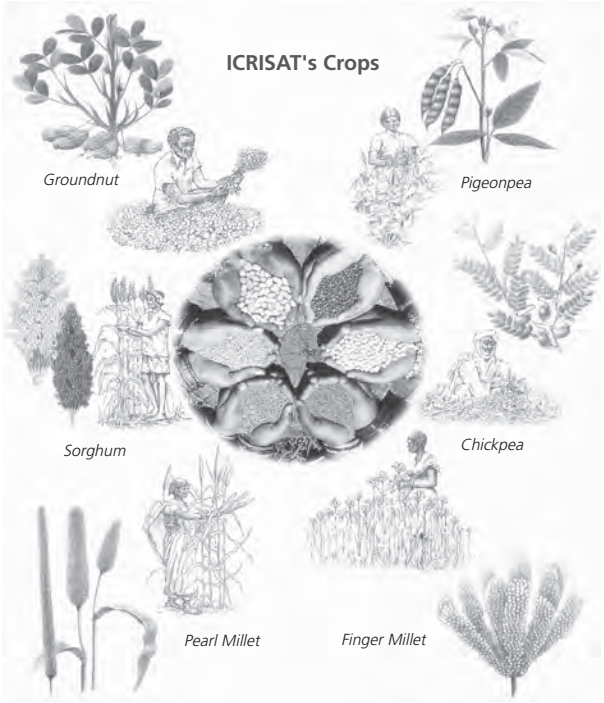
"Our vision: a prosperous, food-secure and resilient dryland tropics. Our mission: to reduce poverty, hunger, malnutrition and environmental degradation in the dryland tropics. Our approach: partnership-based international agricultural research-for-development that embodies science with a human face"

(ICRISAT Strategic Plan to 2020)

1. ICRISAT undertakes a range of work on agriculture, including community-based integrated watershed management, livestock, fisheries, etc. Some of this range is captured in what ICRISAT itself calls its 'jewels' (ICRISAT, 2012a). However, a key focus of its research is its mandate crops and seeds. This paper takes seeds and crops as its central focus, because these illustrate well the frame in which ICRISAT's R&D programmes take place.

Mandate crops

For years ICRISAT has focused its research on its mandate crops – sorghum, pearl millet, finger millet, chickpea, pigeonpea and groundnut. Its success is often measured in terms of the number of 'improved' hybrid varieties released. Yet ICRISAT was never meant to be a commodity-centred R&D institution (as IRRI is for rice), but one with a wider approach to farming systems, including water harvesting and resource management. But these wider issues are at risk of getting marginalised. For the reasons outlined in the previous chapter, ICRISAT's attention has visibly shifted to activities that either get more quantifiable returns or help in the integration with the global market and the value chain (Box 5). And as it deepens its partnerships with the corporations – whose interests lie narrowly in the products they sell,



ICRISAT's Mandate Crops • Source: ICRISAT

rather than in a broader approach – ICRISAT will find it increasingly challenging to take a holistic approach to agriculture.

This shift in focus explains the emphasis on developing hybrids. With the 'Green Revolution' (GR), the focus of ICRISAT's early research was on increasing yields. Hybrid seed production technology is being developed across the Centre's mandate crops to suit different agro-ecologies. For example, ICRISAT-developed pigeonpea hybrids are held up as a success story in India (ICRISAT, 2009). But this focus has meant that ICRISAT has had to work more with the private agricultural research system than with only the NARIs as previously. The development of the hybrid pigeonpea ICPH 2671 (Pushkal) involved commercialisation by Pravardhan Seeds Pvt. Ltd., a member of HPRC (see Chapter 5).

But the use of hybrid seeds is still very low in India and farmers prefer to save and use their own residual crop as seed for the next season (Box 6). Buying hybrids can increase input costs and lock farmers into the use of agrichemicals. One might ask why farmers would want to buy hybrid seeds. There are several reasons, including limited choice, a lack of support for farmers' own varieties; a decline in informal seed exchange systems; propaganda, advertisements and freebies or soft loans encouraging the use of 'high tech', 'modern' varieties; and an artificial scarcity of other seed types created by the formal seed sector. ICRISAT has yet to realise that an increase in hybrids does not mean an increase in the well-being of small farmers.

Today ICRISAT's research activities are organised under four programmes:[27]

1. RP1: resilient dryland systems
2. RP2: markets, institutions and policies
3. RP3: grain legumes
4. RP4: dryland cereals

Following wider changes within the CGIAR system aimed at increasing co-operation among Centres (CGIAR, 2011), ICRISAT has also been designated to lead two of the new Consortium Research Programmes (CRPs), with a combined three-year budget of USD 223.4 million:

1. CRP 3.5 on grain legumes
2. CRP 3.6 on dryland cereals

CRP on grain legumes

This research programme aims at enhanced food and feed security, nutritional balance, economic growth and soil health for smallholder farmers (CGIAR, 2011). It involves a partnership of four of the CGIAR Centres: ICRISAT as lead centre, the International Center for Tropical Agriculture, the International Center for Agricultural Research in the Dry Areas (ICARDA), and the International Institute of Tropical Agriculture. Other principal partners include four major national agricultural research systems (EIAR-Ethiopia, Embrapa-Brazil, GDAR-Turkey and ICAR-India), and the USAID-supported legume Cooperative Research Support. Such partnerships are likely to be of interest to the seed industry as they provide for a readymade supply chain. Amongst the CRP target outputs are hybrid parents and transgenic crops which are of particular interest to the corporate sector. In fact, the research proposal expressly points out that this "…CRP will work closely with both national and multinational seed companies to increase their role in legume seed business" (ICRISAT et al., 2012a). Since 2010 the Indian Government has also run an Accelerated Pulses Production Programme (A3P) under the National Food Security Mission (NFSM), into which the end results and outputs can be fed.[28] This NFSM-Pulses component is an ongoing

Box 6: Why don't hybrids bring farmers freedom?

Use of hybrids seeds is viewed as a modern agricultural practice. The politics behind hybrid seeds is as important to understand as the science. A large number of public and private institutes engaging in R&D and seed production have since the 1980s recognised the business potential of hybridisation. The technique is a means to limit their biggest competition, which is from farm-saved seed (FSS). Farmers who choose to buy and grow hybrids must buy new seed every year if they want to achieve the claimed high(er) yields. So the technology works like a biological patent. Hybridisation involves two separate parental lines: hybrid seeds are the direct product of crossing two genetically different parents. So access to the two parent varieties – the seed parent and the pollen parent - are needed to be able to breed hybrid seeds. When hybrids are protected by intellectual property rights, saving seed is subject to permission from the breeder-seller and is often upon payment of a royalty; only limited quantities for subsistence level cultivation is permitted for free in some jurisdictions. The sales of such seeds, and the licensing out of the parental lines guarantee the breeders their profits. 'Farmers' rights' in domestic laws are rendered meaningless if the research institutes and governments promote hybrid seeds, while not equally facilitating the use of FSS.

[27] See the webpage at www.icrisat.org/icrisat-researchprograms.htm

[28] In 2007 the Government of India launched a scheme called the National Food Security Mission to boost production of rice, wheat and pulses (www.nfsm.gov.in) Senior ICRISAT staff such as Dr. C.L.Gowda, the then Director of the Grain Legumes Research Programme and Dr. P.L.Gaur, Principal Scientist, participated in the GoI's Ministry of Agriculture meetings of the NFSM General Council and made recommendations on the adoption of new pulse production technologies and related matters. These included market-oriented farming and the establishment of a National Pulses Board to streamline the supply of necessary inputs such as new hybrids/cultivars developed by ICRISAT to states and farmers (the minutes of one such meeting can be found at nfsm.gov.in/Meetings_Minutes/Minute5NFSMGC.pdf.

collaboration between the Indian NARIs, state extension systems and ICRISAT. It covers 16 major pulse-producing states and about 97.5%

of the pulse area in the country. For this ICRISAT undertakes contractual research for NFSM needs.[29] Private seed companies then multiply and market the ICRISAT-developed varieties.

CRP on dryland cereals

The goal of this research is food security, better health and economic growth for the world's most vulnerable poor (CGIAR, 2011). Again it involves a partnership between two members of the CGIAR Consortium – ICRISAT as lead centre, and ICARDA – and other global partners, including non-governmental organisations and seed companies (ICRISAT, 2012b). As the ten-year proposal of work for this CRP states, it is focused on improving the productivity of key cereal crops (barley, finger millet, pearl millet and sorghum) targeted primarily to low-¬income, food-¬deficient countries in SA and SSA (ICRISAT et al., 2012b). The work plan consists of what ICRISAT calls "game changing product lines (PLs)", The first of these aims to support "farmers' transition from subsistence to market orientation..." particularly with sorghum in West Africa (ICRISAT et al., 2012b). For this to happen ICRISAT envisages linking farmer organisations with private seed distribution companies as new technology is rolled out. Such private sector partnership is held up as another ICRISAT success story. Through the ICRISAT--Private Sector Pearl Millet Hybrid Parents Consortia, set up in 2000, ICRISAT-bred parental lines were made accessible to private seed companies. The seed companies used these to develop over 80 pearl millet hybrids, which now cover over 5 million hectares of land in India. Thus the private sector became a dominant force in hybrid development and seed delivery. As members of the consortia, the same seed companies then began to fund further research at ICRISAT. In this way smallholders' crop turned into big business, but with disproportionately fewer profits for the smallholders. This is a somewhat different framework from the seed sovereignty envisioned by many smallholders (Kastler et al., 2013).

Banking on genes

While ICRISAT is essentially an R&D centre, it is also an international gene bank. ICRISAT's Genetic Resources Unit was set up in India in 1979, though its long-term storage modules were only set up in 1991. Its germplasm collections make it one of the world's largest repositories of PGR. In 1991 ICRISAT also established a gene bank at the ICRISAT Sahelian Center in Sadoré, Niger, which now has over 36 485 accessions.[30] ICRISAT regional gene banks in Niger, Kenya and Zimbabwe conserve mostly working collections and mini core collections.[31] The World Bank has been providing funds through upgrade projects for 'strengthening' the ICRISAT gene banks.

Today ICRISAT's gene bank in India holds seeds of about 120,000 accessions of pearl millet, sorghum, chickpea, pigeonpea, groundnut and six small millets (finger millet, foxtail millet, barnyard millet, proso millet, kodo millet, and little millet), including wild relatives from 144 countries. These are from farmers' fields the world over, as well as from national collections in Cameroon, Ethiopia, France, India, Iran, Nigeria, Sudan, Uganda and the USA. They are kept as in-trust collections on behalf of the UN FAO. ICRISAT is under legal obligation to maintain these as international public goods (IPGs). The concept of IPGs in agriculture recognises the fact that there is interdependence amongst countries for animal and plant genetic

[29] Financial assistance to the tune of Rs.20 crores was earmarked by the GoI for ICRISAT for the entire XIth Five Year Plan period (2007-2012) in India for large-scale demonstrations of production technologies on a pilot basis. See the NFSM-Pulses Operational Guidelines at http://nfsm.gov.in/Pulses/PulsesGuidelines.pdf.

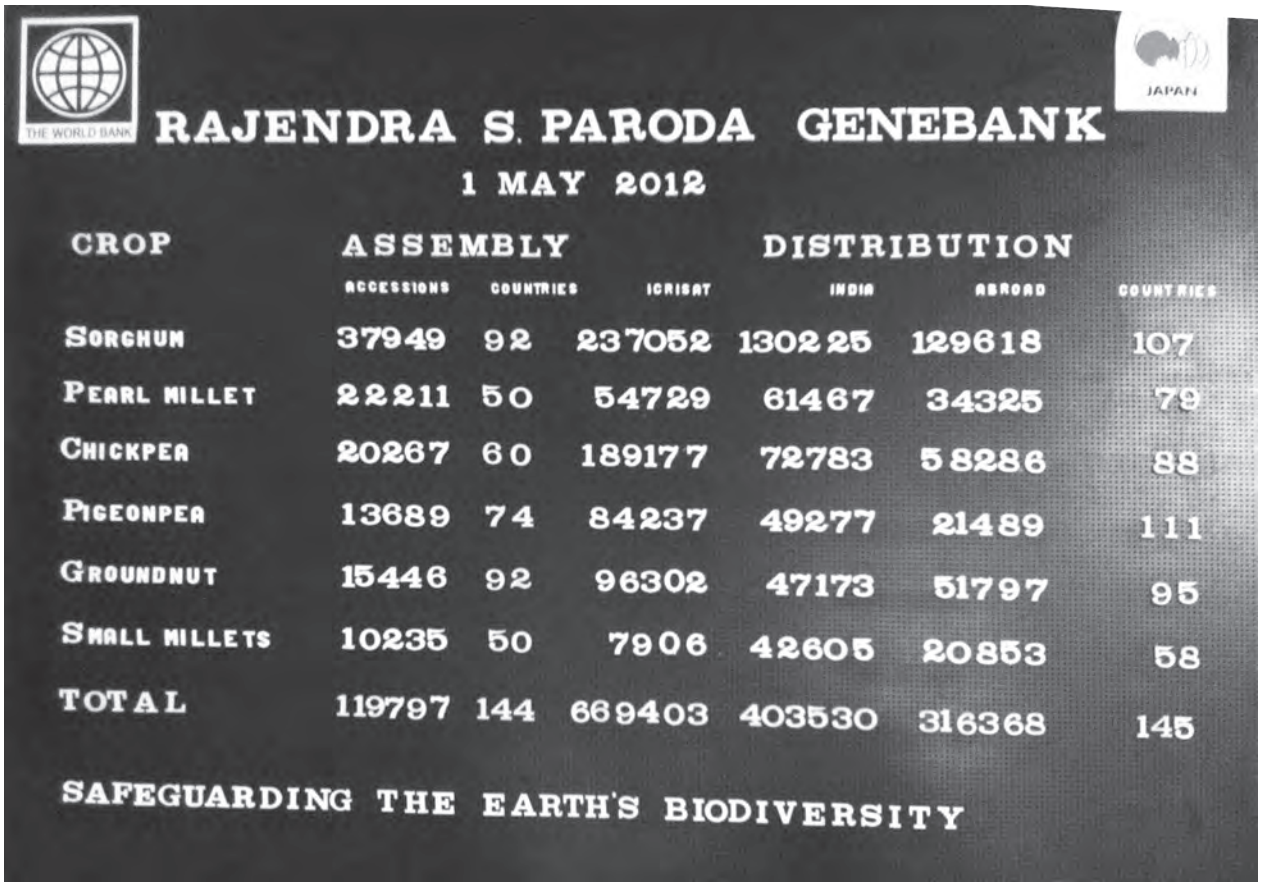
[30] For more details see the webpage "The West and Central Africa Semi-Arid Tropics" at www.icrisat.cgiar.org/icrisat-rrp1-genebank-wca.htm

[31] Given the vast amount of material contained in the gene bank, ICRISAT has selected core collections, representing 10% of the entire collection, and mini core collections, representing 10% of the core collection and 1% of the entire collection. This categorisation is based on what ICRISAT scientists consider to be desirable agronomic traits for breeding programmes.

resources required for food and agricultural needs. Even though a crop variety may be found in one country, international gene banks such as those maintained by the CGIAR at ICRISAT and IRRI, are meant to conserve these genetic materials for all of humanity and not only merely for the source/provider country or a private party. The role of such gene banks is to expand the geographical scope of application of such genetic material and widen access to them (Sagasti & Timmer, 2008).

The collections in these gene banks come under international law, as laid down in the International Treaty on Plant Genetic Resources for Food and Agriculture.[32] As per the Plant Treaty, intellectual property rights (IPR) are not permitted on these PGR in the form they are maintained in these genebanks (which total 600,000 specimens, including ICRISAT's collections).[33] This ensures that this "designated germplasm" is kept in the public domain. As with other CGIAR Centres, ICRISAT signed an agreement with the FAO on 26 October 1994, as part of the international network of *ex situ* collections provided for in Article 7 of the International Undertaking on PGR that preceded the Plant Treaty. After the Treaty came into force in June 2004, the 1994 agreements were updated. Fresh agreements signed between FAO and the CGIAR Centres, including ICRISAT on 16 October 2006, require that the PGR in the latter's gene banks continue to be held in trust (as prescribed in Article 15 of the Plant Treaty).[34]

In 2008 the Svalbard Global Seed Vault (SGSV) was opened in an Arctic cave in Norway, in collaboration with CGIAR, the Nordic Gene Bank and the Norwegian Government. This was argued by those supporting the idea to be a necessary back-up for the world's plant genetic resources. After the opening of SGSV ICRISAT has begun transferring duplicate sets from the gene bank to the seed vault. ICRISAT signed the Standard Deposit Agreement with the



ICRISAT gene bank •Photo credit: Shalini Bhutani

[32] See www.planttreaty.org.

[33] Article 12.3(d) of the Plant Treaty.

[34] The text of the agreement is available at ftp://ftp.fao.org/ag/agp/planttreaty/agreements/pdf/icrisat.pdf .

Norwegian Ministry of Agriculture and Food on 20 September 2007. This agreement stipulates the general conditions for depositing seeds at the SGSV. ICRISAT proposed providing about 110,000 samples of its mandate crops over five years and six small millets (ICRISAT, 2008). ICRISAT has duplicated 86,000 accessions for deposit in the seed vault. More are expected by 2014.

ICRISAT is therefore very much part of the institutional system of *ex situ* conservation of the world's plant genetic resources. This is something small farmers and local groups have been objecting to, not only in India, but across Asia (GRAIN, 2008). In April 2005, there were popular protests outside ICRISAT and local farmers sent an open letter to ICRISAT expressing their disagreement with ICRISAT's germplasm conservation policy because they fear it is "brokering [their] resources to private business…" (letter from farmers to ICRISAT, see Annex III).

ICRISAT scientists emphasise the value of the collection in terms of the 'interesting' material it provides. For instance, they found mildew resistance in local farmer-evolved varieties of pearl millet collected from Africa and Asia, and used this trait to improve varieties. Without such a resource, they argue, it would have been impossible to conduct pearl millet hybrid selection (FnBNews.com, 2012).

However, these breeding programmes are by and large for formal breeding systems, be they in the public or private sector. Though the products of these programmes may be intended for small farmers, and may even be developed through participatory plant breeding, this does not translate into "power-equalising research" (Pimbert, 2012). ICRISAT and the other IARCs may carry out such participatory processes involving farmers, but that does not open up the entire research approach for enquiry or scrutiny by the farmers. The controls over the research programmes are inherently with the government, bureaucracy and formal scientific community. Such an R&D paradigm is institutionalised in the IARCs. Moreover, the disparity and scientific apartheid between the formal and informal researchers remains. Smallholders are beginning to demand local seed collections (based on the same logic as rural banking in the financial sector) to be able to cater to the needs of the small farming households in the villages. As expressly stated in the verdict of a farmers' jury organised in southern India in 2009, they want their own seed banks of local varieties to be established with the help of the state in every gram panchayat (village council); (see Annex VII).

Intellectual property

As part of embracing change, ICRISAT has had to address the issue of intellectual property (IP), one of the new realities of agricultural R&D. But instead of challenging IP systems as small farmers do, it has adjusted its own policy for two main reasons:

1. to defend its own IP, primarily the IP created through the work of its scientists
2. to access IP from the private sector by assuring them that their IP will be respected.

Women farmers protest outside ICRISAT April 2005
Photo Credit: Community Media Trust – Deccan Development Society, Andhra Pradesh

ICRISAT's present IP policy allows for use of "third-party" IP while keeping its legal commitment to maintain the results of its R&D as international public goods. This was underwritten in February 2001, when ICRISAT's Board approved a new Policy of the ICRISAT on IPR and Code of Conduct for Interaction with the Private Sector. This came into force in 2002. More recently, in 2012, the ICRISAT Governing Board approved the adoption of the CGIAR Principles on the Management of Intellectual Assets as ICRISAT's overall principles (CGIAR, 2012). These include wording on the protection of farmers' rights (Box 7).

Other CGIAR Centres – such as IRRI and the International Maize and Wheat Improvement Center (CIMMYT) – have also changed their IP policies to facilitate their work with the private sector (respectively in April 2000 and November 2010; Bhutani, 2011; GRAIN, 2010b).

Since 2005, the CGIAR Central Advisory Service on Intellectual Property (CAS-IP) and ICRISAT have been involved in the CGIAR Prior Art Project to put its publications in front of IP examiners.[35] Under a memorandum of understanding with the European Patent Office (EPO) in The Hague, ICRISAT publications are periodically uploaded onto the EPO's own Non-Patent Literature in-house database. The aim is to ensure that prior art searches will immediately include research results and information published by ICRISAT scientists, thereby avoiding wrongful patents. ICRISAT is also working in a similar manner with the United States Patent and Trademark Office. In India it is in talks with both the Indian Patent Office and the Protection of Plant Varieties and Farmers' Rights Authority for such prior art protection of its outputs (Chapman, 2009). It has already begun characterising all the available hybrid parents for sorghum according to the Indian distinctiveness, uniformity and stability (DUS) test guidelines,[36] in order to place them in the public domain. The irony is that it does not seek such protection for the farmers' varieties it holds in its gene bank (Box 8).

Box 7: Farmers' rights in the CGIAR principles on the management of intellectual assets

3.1 The CGIAR recognises the indispensable role of farmers, indigenous communities, agricultural professionals and scientists in conserving and improving genetic resources.

3.2 The CGIAR seeks to be respectful of national and international efforts to protect and promote farmers' rights as envisaged by the (Plant) Treaty and support the development of appropriate policies and procedures for their recognition and promotion.

Source: CGIAR (2012). CGIAR Principles on the Management of Intellectual Assets, available at www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/fc7_cgiar_ia_principles_inclusion_COF_Feb16_2012.pdf

Back in the 1990s, ICRISAT was in fact an ally in the fight against 'biopiracy'. For example, NGOs and activists found that public research institutes in Australia, including the Centre for Legumes in Mediterranean Agriculture (CLIMA), had filed applications at Australia's Plant Breeder's Rights Office seeking IP rights

Box 8: IPR provisions in an agreement between ICRISAT and Junagadh Agricultural University (JAU), Gujarat, 2006

ICRISAT and JAU recognise the importance of Intellectual Property as a component of the agricultural research agenda. ICRISAT and JAU reserve any and all intellectual property rights, without limitation discovered or produced as a result of the cooperation related to this MoA. ICRISAT and JAU will make available to their developing country partners results of activities by the most appropriate mechanism, which may include seeking of statutory IP protection where appropriate. No information or invention developed as a result of this cooperation will be protected through any form of statutory or non-statutory intellectual property right mechanism by either collaborator without express written approval from the other.

(For full text of the Agreement please see Annex IV)

[35] Prior art is knowledge about any invention that is previously disclosed to or known by the public before a patent application for that invention is filed. Patent offices check for the existence of prior art to verify claims of novelty in the application.

[36] For plant breeders' rights to be granted, the new variety must meet four criteria under the rules established by UPOV (the International Union for the Protection of New Varieties of Plants): 1) the new plant must be novel, which means that it must not have been previously marketed in the country where rights are applied for; 2) the new plant must be distinct from other available varieties; 3) the plants must display homogeneity; and 4) the trait or traits unique to the new variety must be stable so that the plant remains true to type after repeated cycles of propagation.

on two varieties of chickpea (Heera and Sona) derived from farmers' varieties in India and Iran respectively (RAFI, 1998). These were part of the gene bank collection in ICRISAT that had been transferred to Australia under FAO-prescribed material transfer agreements (MTAs).[37] ICRISAT intervened successfully in getting CLIMA to abandon its claims for breeder rights.

But ICRISAT nowadays doesn't show the same zeal in challenging other IP applications by NARIs and private companies under the plant variety protection (PVP) law in India for instance, even though these applications may be based on varieties of common knowledge to farmers and/or developed by them.[38] On the contrary, ICRISAT is more preoccupied with protecting its own IP.

Despite the changes in its IP approach, however, ICRISAT staff say that both the IPR Policy and the standard material transfer agreement (SMTA) "deter technology commercialisation and incubation" (ICRISAT, 2012c). ICRISAT's agribusiness personnel would rather have the Centre's IP and SMTA policies "liberalised". This indicates that ICRISAT, and particularly its agribusiness arm, could further the mainstream IP agenda: to effectively privatise genetic resources.

Such an approach runs counter to that of small farmers, such as those who form part of the Via Campesina movement for food sovereignty. They state that they work hard "to summon all our knowledge, to recover our seeds, multiplying them, care for them, swap them and let them walk again, grow and multiply by our fields without hindrance or aggression".[39]

Biotechnology

In the mid-1990s, ICRISAT began to focus on the new tools, methods and products offered by biotechnology (Table 3). The Transgenic Plants Containment Glasshouse was first set up in April 2000 at ICRISAT's campus in Patancheru. In 2002, ICRISAT began contained field trials of the world's first transgenic groundnuts modified to resist the Indian peanut clump virus, which is widespread in India and West Africa. These trials proved successful (ICRISAT, 2003).

In 2003 the EPR of ICRISAT recommended that the Centre should undertake strategic research on genomics and transgenic product development for SAT crops. Since then, the biotechnology programme has evolved considerably (Table 3). From 2003 to 2006, ICRISAT undertook controlled field trails of genetically modified (GM) pigeonpea on its campus. In 2006 it also sought permission from the authorising government agency in India's Environment Ministry – the Genetic Engineering Appraisal Committee (GEAC; Box 9) – to export transgenic groundnut seeds to South Africa for testing for research purposes. The GEAC sought recommendations from India's National Biodiversity Authority (NBA) as well as comments from the Ministry of Agriculture and National Bureau of Plant Genetic Resources and the application was approved by NBA in October 2007 (Annex I). This was approved despite the fact that India does not have an adequate biosafety regime (see section on Biosafety below). Furthermore, NBA – the national-level body with a legal mandate for biodiversity conservation – is approving

Box 9: GM chickpea approvals for ICRISAT in India

The Genetic Engineering Appraisal Committee (GEAC) of India's Environment Ministry is responsible for the environmental assessment and granting of approvals for activities involving large-scale use of hazardous micro-organisms and GM products.

In 2012 the GEAC approved ICRISAT's request to conduct event selection trials in a confined field at Patancheru of transgenic chickpea (Cicer arietinum) containing cry2Aa gene (for resistance to pod borer, Helicoverpa armigera). The approval was subject to submission of a NOC – No Objection Certificate – from the state government where the trials will be conducted.

Source: Ministry of Environment and Forests, 2012

[37] Model agreements used by CGIAR since 1995 between parties for the transfer of genetic materials with terms and conditions.

[38] The Protection of Plant Varieties and Farmers' Rights Act, 2001 http://www.plantauthority.gov.in/

[39] Women of Via Campesina International Manifesto, IV Women's Assembly, Jakarta Indonesia, June 2013 http://viacampesina.org/en/index.php/main-issues-mainmenu-27/women-mainmenu-39/1450-women-of-via-campesina-international-manifesto

Table 3. The evolution of ICRISAT's biotechnology programme

1995	India becomes a member of the World Trade Organisation, which provides for IP protection for genetically modified life forms
1996	Biotechnology research begun through the Genetic Enhancement Division
1997	Global Project (Global Theme 2) - New tools: adapt and apply new science methods to SAT crops improvement
2000	Genomics Project established
2001	Biotechnology elevated into a project (P5) and then re-assigned as GT1
	India's *sui generis* law in compliance with WTO TRIPS – its PVP law was passed; it does not prohibit the registration of GM crop varieties for IP protection *per se* but does not allow any variety with 'terminator technology' to be so registered
2002	Global Theme 1 (GT1) - Harnessing Biotechnology for the Poor (GT-BT)
	Indian Patent Law was amended to include biochemical, biotechnological and microbiological processes within the scope of chemical processes for the grant of patent
	For the first time in India transgenic crops – three Bt cotton hybrids, are approved for commercial cultivation in the country
	India's Biological Diversity Act was passed by the Parliament to allow for access to Indian genetic material and the sharing of benefits accrued therefrom
2003	India ratified the global Cartagena Protocol on Biosafety, which came into force the same year
	ICRISAT develops world's first transgenic groundnut
2006	Centre of Excellence in Genomics (CEG) established with support of the Department of Biotechnology (DBT), GoI
2007	India's National Biotechnology Development Strategy approved by the Government of India
2008	A National Biotechnology Regulatory Authority of India Bill drafted by the DBT was proposed to be introduced in Parliament; it was met with stiff public opposition
2009	Platform for Translational Research on Transgenic Crops (PTTC) established with DBT, GoI

the export of GMOs that might cause genetic contamination or loss of biodiversity in another country.

In February 2009, in collaboration with the Department of Biotechnology at India's Ministry of Science and Technology,[40] ICRISAT set up the PTTC at Patancheru. With a remit to develop, analyse and commercialise transgenic crops, the PTTC provides state-of-the-art facilities to ICRISAT, NARIs and small and medium private sector seed companies. In an interview with the author, Dr Kiran Sharma (Principal Scientist and Director of PTTC and CEO of the Agribusiness and Innovation Platform) explained that as public "extension has failed in this country", the facility would serve as a delivery mechanism for GM crops to small farmers.

ICRISAT, supported by its investors and partners, has increasingly become a venue for global debates and projects on the benefits of biotechnology. Examples include the International Biotechnology Colloquium supported by the Rockefeller Foundation in 2003[41] and APAARI's Asia-Pacific Consortium on Agricultural Biotechnology workshop in 2006. ICRISAT was also involved in organising a session on agricultural biotechnology at the tenth edition of BioAsia 2013, the leading event for biotechnology and life sciences in Asia.

[40] The DBT's funding commitment for the PTTC for 2008-2013 was INR 248.79 million (USD 6.25 million).

[41] Bridging the Technology Divide: Agri-science Alliances and the New Architecture of Innovation, held at ICRISAT-Patancheru in March 2003.

ICRISAT is also participating in bio-technology R&D projects through bilateral partnerships. For example, it is working with Krishidhan Seeds Pvt. Ltd., India on genomics-assisted accelerated product development of high yielding pigeonpea hybrids. This partnership is funded by India's Biotechnology Industry Partnership Programme (BIPP).[42] The industry Association of Biotechnology-Led Enterprises (ABLE)[43] – of which ICRISAT is an associate member – is a knowledge partner in the BIPP scheme. ABLE-AG aims to accelerate the pace of biotechnology in Indian agriculture by enabling strategic alliances between researchers, the government and the Indian and global biotech industry.

Dr Seetharama, the Executive Director of ABLE's Agriculture Group – ABLE-AG – was a former research scientist at ICRISAT. Dr Seetharama also serves as a member of the research advisory bodies of ICAR and the Department of Biotechnology. ABLE-AG consists of 12 member companies that are considered leading technology providers of modern agricultural biotechnology to India. The members are: Advanta India, BASF India, Bayer BioScience, Devgen Seeds, Dow AgroSciences, JK Agri Genetics, Mahyco, Metahelix, Monsanto, Nath Biogene, PHI Seeds and Syngenta India.

Biosafety

On the one hand ICRISAT states that biological diversity is key for research on food security (FnBNews.com, 2012).[44] Like all other CGIAR Centres, ICRISAT has a strict policy of not deploying transgenic crops without the express approval of national governments, and then only if there is an established and effective regulatory framework to ensure the safe use of GM crops during field trials and independent assessment before their release in the open environment. Yet on the other hand, ICRISAT's GM R&D continues unabated despite the lack of an effective biosafety regime in India and across the SAT. This could put agro-biodiversity at risk of possible genetic contamination.

Since 2005, ADARSA's Indian members, such as the Deccan Development Society, have been engaged in a fierce legal battle in the Supreme Court of India for an independent biosafety regime to be set up in the country.[45] In May 2006 the Supreme Court directed that field trials of GMs should be conducted only with the approval of the GEAC. This order was lifted in May 2007, subject to certain conditions such as the maintenance of 200 metres isolation distance while performing GM field tests. A further clarification was introduced by the Court in April 2008, whereby all concerned must confirm that there has been no contamination of the natural environment either through pollen flow or cross pollination with related species.

In May 2012 the Court appointed a Technical Expert Committee (TEC) to explore the following questions:

- Whether there should or should not be any ban, partial or otherwise, upon conducting of open field tests of the GMOs?
- In the event that open field trials are permitted, what protocol should be followed and conditions, if any, that may be imposed by the Court for implementation of open field trials?

The TEC subsequently recommended a 10-year moratorium on GM crops. However, there is much controversy about the TEC Report and the GoI is considering challenging it.[46]

Dr Seetharama, Executive Director of ABLE-AG, publicly decries the 2012 report of an all-party Parliamentary Committee on Agriculture that advised against the use of GM

[42] Government of India's partnership programme with industry http://www.birac.nic.in/programmes.php?prg=bipp

[43] See the ABLE website at www.ableindia.in/sigab.php.

[44] A statement to this effect was made by the DG on the occasion of the Eleventh Conference of Parties (COP 11) of the Convention on Biological Diversity (CBD) held in Hyderabad, India in October 2012.

[45] Aruna Rodrigues & Others vs. Union of India & Others Writ Petition (Civil) No. 260 of 2005

[46] See www.thehindu.com/news/national/court-panel-on-gm-crops-exceeded-brief-ministries/article5523882.ece

crops in India till the GoI had put together the necessary regulatory and monitoring structures (Sood, 2012). The report expressly recommends that R&D on GM crops be done only in strict containment and that field trials in any form be discontinued immediately (Lok Sabha Secretariat, 2012). Quoting the report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD, 2009), and in line with its recommendations, it urged a rigorous rethink of biotechnology and especially modern biotechnology. The Parliamentary Committee Report notes that ICRISAT has already developed the world's first GM groundnut, and has ongoing GM trials at its Patancheru research farm. This is not the only GM food crop that ICRISAT is testing (Box 9). Information is not publicly available on whether, and if so, when, ICRISAT suspended field trials after this report.

Since 2008, groups in India have also rallied against the proposed industry-friendly 'biosafety' law – the Biotechnology Regulatory Authority of India Bill. Public protests in India, Bangladesh and the Philippines have kept GM Brinjal/eggplant – the first GM food crop – from being commercially released due to biosafety concerns. Even in Africa there is growing popular concern against GE crops and their role in the future of smallholder agriculture (Bryant, 2008).

ICRISAT has clearly has no problem with the use of modern biotechnology. Today the Chair of ICRISAT's Governing Board – Dr Nigel Poole – is the former face of the GM industry.[47] Nonetheless, ICRISAT has promised to expand its research in the biosafety aspects of transgenic crops, and pro-actively address issues related to public acceptance. It has developed a Policy on Genetically Engineered Crops to guide this work (Box 10). Its Biosafety Committee

Box 10: ICRISAT's policy on genetically engineered crops

Based on the ICRISAT Vision and Strategy Document, the following guidelines are followed as the Center's Policy on Genetically Engineered Crops (GECs):

- ICRISAT's strategies for the development and deployment of GEC's are guided principally by the CGIAR's policy and its modification from time to time.
- ICRISAT will maintain an open door policy on the information related to the development and deployment of GECs.
- ICRISAT's research on GECs will primarily focus on solving the problems that constrain the production and productivity of its mandate crops.
- ICRISAT's focus is on using natural or synthetic genes for genetic transformation from closely related wild relatives, other plants, bacteria, viruses, and fungi.
- ICRISAT will not use any genes or gene constructs that are prohibited (e.g., terminator technology) by CGIAR and/or the country of intended deployment.
- Plant varieties that are genetically engineered by ICRISAT will be developed, tested and deployed in concert with national programme partners to meet a delineated need.
- ICRISAT will provide training to NARS scientists and share the information so as to facilitate the transfer of technology for effective deployment of GECs.
- ICRISAT will provide transformed plants that have been well characterized molecularly and biologically under pre-field and/or field screening conditions to the NARS, or provide partially characterized transformed plants to project collaborators responsible for such characterisation.
- ICRISAT will work on GECs only in countries that have biosafety legislation or guidelines.
- ICRISAT will seek formal permission from concerned governments prior to transfer of GECs for research and deployment, or follow current government biosafety policies where such formal permission is no longer required.
- ICRISAT will pursue active research in collaboration with NARS and ARIs on biosafety and deployment of GECs.

Source: ICRISAT's webpage on genetic engineering at www.icrisat.org/bt-ge-introduction.htm

[47] For details of his links with the GM industry see the GM Watch website at www.gmwatch.eu/index.php/component/content/article?id=13283:

includes two high-ranking officers from the Government of India. But given that the GoI is pro-GM, this is little assurance. Apart from the occasional events ICRISAT organises on the issue of biosafety,[48] it would be particularly useful if it could do more to open up to the public its biosafety practices and processes. This could push governments in the 'South' and facilitate NARIs in both Asia and Africa to do likewise.

From seeing ICRISAT as an ally, there is now growing distrust amongst anti-GM small farmers and those pursuing sustainable agriculture over the Centre's ability to deliver them from the peddlers of modern biotechnology. Indeed it is these "peddlers" who are becoming its closest partners. It is not just ICRISAT that comes under the spotlight. At another CGIAR Centre – CIMMYT – the risk of GM contamination of the Centre's maize collections in its global gene bank became a major issue in 2002.[49] The CGIAR, through its International Food Policy Research Institute (IFPRI), runs a Programme for Biosafety Systems (PBS). This is funded by USAID, which in line with US foreign agricultural policy, is keen to see developing countries have functional biosafety systems so that they overcome their hesitance to use GM crops.[50]

Apart from the IARCs as a whole, ICRISAT staff enjoy diplomatic status in India under the UN Immunities and Privileges Act, 1947. While this is a routine courtesy extended to international organisations, with the deployment of potentially risky technologies in agriculture, such immunity seems counter-productive. Amid world-wide calls for accountability, transparency and responsibility in scientific research and technology application, the scientists of ICRISAT (as in any other CG Centre) are immune from the national laws of the countries in which they are based. This is a serious matter, particularly in the context of biosafety.

[48] For example, see www.icrisat.org/newsroom/news-releases/icrisat-pr-2013-media20.htm

[49] CIMMYT Responds to "Joint Statement" on Genetically Modified Maize in Mexico, February 22, 2002, CIMMYT Release

[50] See IFPRI's PBS webpage at http://pbs.ifpri.info/about/.

5. Old partners, new partnerships

ICRISAT has placed a high degree of importance on partnership-building activities in the past few years. The changing nature of its partnerships describes best what it has become today. In its early years, its partners were essentially the NARIs, but the last 20 years have seen many NGOs and private companies come on board. As explained by the Director-General of ICRISAT, "(i)n 2010, we were involved in 190 active partnerships and distributed 20% of our budget to partners to execute joint research-for-development activities" (Hilario, 2011).

Research consortia for hybrid seeds

The first of the partnerships in this genre is the Hybrid Parents Research Consortium (HPRC), established in 2000. This was the Centre's first foray into private partnering, and works with private sector local and international seed companies (Table 4). The HPRC initially covered sorghum and pearl millet, but now includes the six mandate crops (sorghum, pearl millet, finger millet, chickpea, pigeonpea and groundnut). Dr Gowda was one of the main architects of the HPRC, which is regarded as ICRISAT's flagship public-private partnerships (PPPs) programme. He explained in an interview with the author that, "the new ICRISAT only 'formalises' the relationship the Centre (informally) had with the private sector". ICRISAT was amongst the first of the CGIAR Centres to embrace PPPs, as well as to develop private sector arrangements for generating money (GRAIN, 2004). ICRISAT supporters explain this as inspired by the Bill Gates' 'creative capitalism' idea – creating a profit while helping the poor.[51]

Table 4: HPRC's private sector partners

	India-based		Non-India based
1.	Advanta India Ltd.	1.	Adriana Seed Company, Brazil
2.	Ajeet Seeds Ltd.	2.	CERES Inc., USA
3.	Ankur Seeds Pvt. Ltd.	3.	Dow AgroSciences Industrial Ltd. (DASIL) – through Agrigenetics, Inc. USA – Brazil
4.	Atash Seeds Pvt. Ltd. (Avesthagen Technologies)	4.	KWS SAAT AG
5.	Bayer BioScience Pvt. Ltd.	5.	SEFLOARCA, C.A., Venezuela
6.	Biogene Agritech		
7.	Bioseed Research India Pvt. Ltd.		
8.	Biostadt MH Seeds Ltd.		
9.	DevGen Seeds and Crop Tech Pvt. Ltd.		
10.	Ganga Kaveri Seeds Pvt. Ltd.		
11.	J K Agri Genetics Ltd.		
12.	Kanchan Ganga Seed Co Pvt. Ltd.		
13.	Kaveri Seed Co Pvt. Ltd.		

[51]Bill Gates' speech on 'Creative Capitalism' at the World Economic Forum 2008. Can be viewed on Youtube: www.youtube.com/watch?v=ws21GbIaNsE

14.	Kesar Enterprises Ltd.		
15.	Krishidhan Seeds Pvt. Ltd.		
16.	Metahelix Life Sciences Pvt. Ltd.		
17.	Nath Biogene (I) Ltd.		
18.	Navbharat Seeds Pvt. Ltd.		
19.	Nimbkar Seeds Pvt. Ltd.		
20.	Nirmal Seeds Pvt. Ltd.		
21.	Nu Genes Pvt. Ltd.		
22.	Nuziveedu Seeds Pvt. Ltd.		
23.	Pioneer Overseas Corporation		
24.	Sagar Laxmi Seeds		
25.	S M Sehgal Foundation		
26.	Spriha BioSciences Pvt. Ltd.		
27.	TriMurti Plant Sciences Pvt. Ltd.		
28.	Vibha Agrotech Ltd.		

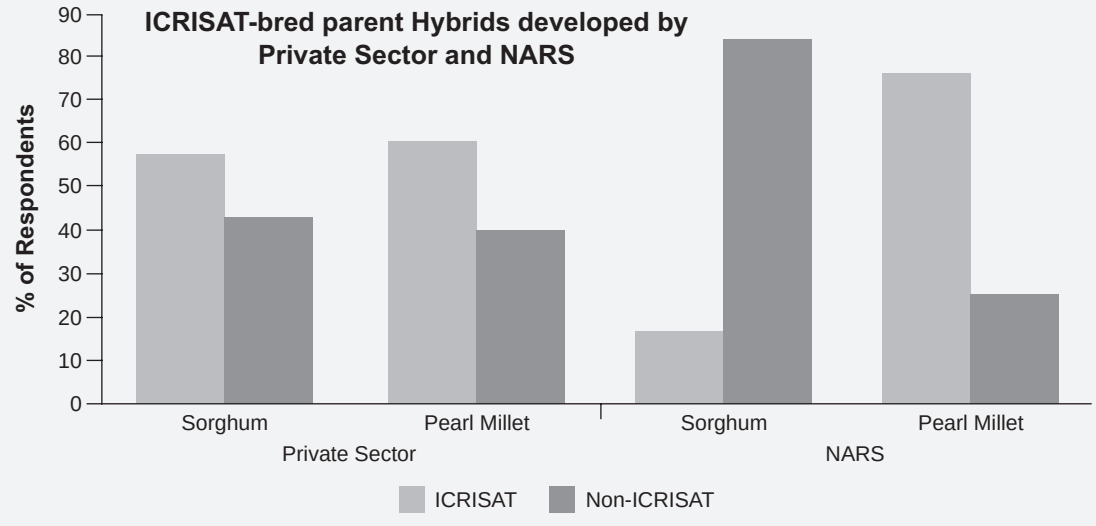
Source: Communication with ICRISAT staff, 13 June 2012

Companies join the HPRC by paying a fee; this gives them non-exclusive use of ICRISAT bred hybrid parents or their derivatives for their own breeding programmes. No lateral exchange amongst the members is allowed. ICRISAT sees this as a large-scale network for delivering their 'innovation' to farmers via private seed companies. HPRC capitalises on the private sectors' ability to produce and market hybrid seed to make them available to smallholder farmers.

A three-year time-limited exclusivity allows HPRC members to benefit from the sale of hybrids before non-members (for more details see Annex V). This is an important incentive for new members to join the consortium.

This model of shared germplasm development, and other PPP initiatives, works very satisfactorily for ICRISAT (Figure 4). It has also set a trend followed by other IARCs, such as IRRI's Hybrid Rice Development Consortium (HRDC),[52] despite resistance by Asian small farmer groups (Gueta, 2009). Similar PPP efforts are also underway between some NARIs and the Barwale Foundation (Bhutani, 2013).

Figure 4: How ICRISAT-bred parent hybrids dominate hybrid development



'Figure 4: ICRISAT-bred Hybrids dominate
Source: Mazvimavi, K. 2013. Impact Assessment at ICRISAT. Presentation to the ICRISAT's Global Planning Meeting, 11 February 2013, ICRISAT Patancheru, India

[52] See IRRI and Hybrid Rice at www.panap.net/en/r/post/rice/900

Joint projects

Beyond its market-oriented consortia, ICRISAT also continues to work with a wide array of partners on other joint projects. For example, as of February 2012, ICRISAT was implementing 50 projects supported by the GoI.[53] One such is an ICRISAT-DBT sorghum biofortification project launched in 2012.[54] It aims to 'biofortify' sorghum with a high grain iron and zinc concentration for combating micronutrient malnutrition in both SA and SSA.

ICRISAT is also enhancing a sorghum R&D strategy for India. Through the Harnessing Opportunities for Productivity Enhancement of Sorghum and Millets (HOPE) project involving a wide array of partners, ICRISAT aims "to address the decline in sorghum production by stimulating research, enhancing technology use, linking farmers with markets, and strengthening the capacity of national and civil partners" (ICRISAT, undated). Sorghum is also a key crop for ICRISAT's work in Africa. It was part of an Africa Biofortified Sorghum (ABS) Project, with several public-private partners, including DuPont and Africa Harvest.[55]

Local collaborations on climate and water

Along with its large international projects, ICRISAT has also been signing up for joint activities with state agricultural departments or state agricultural universities (SAUs) within India (Annex IV), which may or may not have other international partners. For instance, in June 2012 it signed a four-year MoU with the Karnataka State Government in South India, along with six other CGIAR Centres, to help make agriculture climate-resilient in the state (The Hindu, 2012). This is not merely an MoU, but a consultancy contract. In its new mode of working, ICRISAT is charging consultancy fees. The contract in this case is for INR 29 crores (approx. 4,658,410 USD) over a four-year period (Annex II). In another example, earlier in 2012 ICRISAT signed up with Kerala Agricultural University (KAU) – the only university in India to have a course on climate change studies – for intensive collaboration on both joint research activities as well as training and academic activities related to climate crises (ICRISAT, 2012d).

The GoI's Department of Science and Technology (DST) Climate Change Programme in the Ministry of Science and Technology launched the Centre of Excellence on Climate Change Research for Plant Protection in 2012 at ICRISAT headquarters (Sustainability Outlook, 2012). The three-year project, funded by the DST, has an overall goal of establishing facilities and providing opportunities for ICRISAT and partner institutes to conduct research for development on climate change and its impact on legume diseases and insect pests in the SAT. Dr Prabhat Kumar of ICRISAT was on the Planning Commission of India's Working Group on Risk Management in Agriculture for the Eleventh Five Year Plan. But smallholders question the relevance of this research, fearing it only reinforces the use of corporate-developed technologies (La Vía Campesina, 2012).

ICRISAT's work on water management also involves partners from the corporate sector.

SABMiller, the Indian arm of SABMiller Plc, one of the leading brewers in the country, is in one such collaborative project with ICRISAT.[56] Likewise, Coca Cola's Foundation in India is also involved in with ICRISAT in watershed programmes in states like Karnataka.[57]

ICRISAT and Jain Irrigation Systems Ltd (the world's second largest micro-irrigation company) have an existing MoU on watershed management for enhancing water-use efficiency and improving farmers' livelihoods in rainfed areas.[58] In the state of Maharashtra, ICRISAT is

[53]India and ICRISAT Flyer, February 2012: www.icrisat.org/who-we-are/investors-partners/donor-flyers/31_India_and_ICRISAT_English_scr.pdf

[54]See ICRISAT's Happenings newsletter at www.icrisat.org/newsroom/latest-news/happenings/happenings1537.htm

[55]For more see ABS Project http://biosorghum.org/home.php

[56]See ICRISAT press release at www.icrisat.org/newsroom/news-releases/icrisat-pr-2013-media7.htm

[57]See ICRISAT's Happenings newsletter at www.icrisat.org/newsroom/latest-news/happenings/happenings1578.htm#1

[58]See the Jain Irrigation Systems website: www.jains.com/Company/News/ICRISAT%20and%20Jain%20Irrigation%20Systems%20Public-private%20partnership%20on%20water%20management%20for%20the%20poor.htm http://www.icrisat.org/newsroom/latest-news/happenings/happenings1479.htm

also implementing one of its model integrated watershed management programmes supported by GoI's Department of Agriculture in partnership with JalaSRI of Moolji Jaitha College, Jalgaon.

Energy partnerships

ICRISAT has launched BioPower as a way of ensuring "that the billions of dollars now flowing into bio-energy benefit the poor, rather than marginalizing them" (BioPower homepage).[59] This involves:

- Analysing bio-energy trends to understand their consequences for the poor
- Developing biofuel crops and cropping methods that increase incomes and food supplies for the poor
- Helping the fuel industry work successfully with the poor for mutual benefit
- Helping governments develop pro-poor bio-energy policies
- Using bio-energy trees to rehabilitate degraded lands while earning incomes for the poor.

BioPower is a catalyst for strong and innovative partnerships between the government, private sector and ICRISAT. One such partnership project is Supporting Farmers' Activities in the Value Chain of Biofuels, which ran between 2006 and 2009. The German development co-operation agency GTZ facilitated farmer-based biofuels production from raw material to final product within a private-public partnership framework in Nalgonda district, Andhra Pradesh. The partners involved in this initiative were:[60]

- ICRISAT
- Southern Online Bio Technologies Ltd. (SBT): a biodiesel producer company based in Andhra Pradesh
- Lurgi AG: a German multinational corporation in the energy sector
- Chemical Consortium International Ltd. (CCI): a Delhi-based company in the biomass sector, which also set up a 2MW biomass project in Haryana, India

The ICRISAT-Private Sector Sweet Sorghum-Ethanol Research Consortium (SSERC) was established in 2007 to meet current and future demands for sweet sorghum-based ethanol distillery units. It was facilitated by ABI (ICRISAT, 2008). Subsequently, ICRISAT created a Private Sector Sorghum Hybrid Parents Research Consortium. These consortia have brought in several private sector companies, such as Rusni Distilleries, Tata Chemicals and Praj Industries, linking them to sorghum growers for assured feedstock, while attempting to provide a ready market to farmers. Given the public opposition to 'bio'fuel plantations in India and other parts of the world, ICRISAT markets sorghum as a 'smart crop', which provides fuel while not compromising food security. ICRISAT has also been involved in promoting other first-generation agrofuels (Box 11). But the socio-economic model might not be in sync with the idea of food sovereignty. The ICRISAT approach is essentially to integrate poor smallholders into the large-scale sweet sorghum feedstock supply chains. The question to ask is how much say do small farmers have in what the consortia partners are doing?

In 2012 the US Department of Energy announced its selection of three consortia to make up the USD 125 million US-India Joint Clean Energy Research and Development Center (JCERDC). The second of the three consortia is dedicated to second generation biofuels and will be led by the University of Florida, with the University of Missouri; Virginia Tech; Montclair State University; Texas A&M University, Show Me Energy; and Green Technologies on the US team. The Indian team will be led by the Indian Institute of Chemical Technology-Hyderabad, and will include ICRISAT, and the Directorate

[59] www.icrisat.org/Biopower, accessed 19 November 2013.

[60] For more see the ICRISAT/GTZ leaflet Biofuels Cycle: Private-Public Partnership for Sustainable Development and Income Generation through Technical Cooperation at www.icrisat.org/Biopower/WaniGTZ-Brochure.pdf and also the Southern Online Bio Technologies Ltd. Website at www.sol.net.in.

Box 11: Case study: Jatropha Promoting agrofuel models in India

From 2005 to 2008, the National Oilseeds and Vegetable Oils Development (NOVOD), together with ICRISAT, developed a project for Jatropha curcas and Pongomia[61] plantations in co-operation with the Andhra Pradesh State Government. It was in fact an attempt to set a template for the Government, which was its main client. The project involved a model plantation of Jatropha and Pongomia (with seed provided by ICRISAT) on 300 hectares of common property resources (revenue land) in two villages in Ranga Reddy District and 200 hectares of Pongamia and Jatropha plantations on private degraded lands in Kurnool District.

After studying these plantations, ICRISAT has since advocated that both carbon sequestration and land rehabilitation can be achieved through planting Jatropha on degraded lands (Wani et al., 2012).

The study sought to encourage the farming of such crops. This was in part to quell the voices of critics who have argued that Jatropha cultivation diverts lands that could be used to grow food crops and therefore undermines food security (SciDevNet, 2012). The local villagers may have been given usufruct rights to harvest the trees planted on their common lands, but these lands are also considered as essential grazing areas for local cattle and livestock. So 'bio'fuel planting may actually undermine biodiverse subsistence agriculture in these areas.[62] Moreover, private companies were brought in through PPPs with ICRISAT, including Kirloskar Engineering Pvt Ltd. and Southern On-line Biotechnology to use the seeds to produce power. Such arrangements find favour with biotechnology entrepreneurs and those from the scientific community who support GM agrofuels, for the ready-made entry points they provide their enterprises/technologies. There are therefore concerns about the overall sustainability (social, economic and ecological) of such endeavours.

For more details of the study, please see Sreedevi et al. (2009).

of Sorghum Research-Hyderabad and Abellon Clean Energy, amongst others (Ministry of Science and Technology, 2012).

South-to-South

Both ICRISAT and India are gearing up to play a much larger role outside India. In fact partnering with ICRISAT fits with India's global aspirations to work within the global world order and integrate with the world economy to advance its own interests. India's domestic companies, particularly in the agriculture sector, are ever keen to go international. They have not only made forays into the sub-region, but also into African countries in a big way. The US Administration has also hand-picked India as a strategic partner in agricultural R&D for its own advances in the African continent. And World Bank funds to India have prescribed a certain developmental path. ICRISAT then becomes a means to that end (Bhutani, forthcoming).

ICRISAT is under greater pressure from its funders and senior management alike to show the impact of its research in countries other than India. For example, despite being an 'international' organisation, until 2002 the Centre principally gave heavy emphasis to operations and research in India. In 2002, 600 of a total staff of 816 were located in India, and 61% of gross operating expenses (excluding indirect cost recovery and staff separation costs) were incurred in Asia, compared to 39% in Africa. The 5th EPMR of ICRISAT recommended that natural resources management research be concentrated in Africa and that the organisation change its India-heavy governance structure (ICRISAT, 2004).

ICRISAT's 6th EPMR reiterated these points, firmly recommending that the Centre set priorities for SSA (CGIAR, 2009). The reviewing panel asked ICRISAT to continue to enhance investments in personnel and infrastructure in SSA and to prioritise research conducted at the Patancheru headquarters that would have spillover benefits for the African sub-continent. To facilitate the Africa outreach, the Board at ICRISAT has even considered shifting its HQ to Africa.

The last few years have seen rapid changes on the India-Africa front. In 2011 ICRISAT launched its South-South Initiative[63] as a platform for focused and systematic partnership on agricultural research for development (AR4D) between the Asian and African

[61] Jatropha curcas is a flowering plant whose seeds contain oil that can be processed to produce a high-quality biodiesel fuel, usable in a standard diesel engine. Pongomia is the generic name for Millettia pinnata, a tree being explored for producing biodiesel (Wikipedia).
[62] See the statement issued by the National Consultation on Biofuels In India, at www.ddsindia.com/www/biofuel_india.html
[63] 'ICRISAT's South-South work has an explicit component of building connections between two Southern countries.'

continents.[64] There are two main elements that stand out in ICRISAT's South-South work today:

- the pivotal role given to public-private partnerships (PPP)
- the emphasis on the India-Africa axis and a stepping up of Africa work in general.

ICAR is to play a pivotal role in this partnership. The launch meeting of the South-South Initiative was attended by senior officials and private entrepreneurs from India and Africa, including Sudan, South Africa, Ethiopia, Zambia, Mali and Nigeria.

The Africa plans include developing a NIABI type of network in that continent as well. An

ABI-ICRISAT Agribusiness Project Coordinator based in Nairobi, Kenya was being sought.[65] ICRISAT's Agribusiness and Innovation Platform has been selected by the Indian Ministry of Food Processing Industries to set up Food Testing Laboratories (FTLs) in five African countries. The FTLs are being funded by the GoI under schemes that were announced by the Prime Minister of India at the 2nd India Africa Forum Summit in 2013.[66]

ICRISAT is well aware of the limitations of its work in Africa and the resultant lack of visibility to its efforts. As explained by senior management, there are difficulties in doing certain things in Africa. This is in part due to lack of facilities and infrastructure, hindrances to basic research and the lack of entrepreneurs. India is better placed on these fronts and therefore it makes sense for the Centre to use India as its base for its outward strategies in Africa. This is rationalised by the Centre as fulfilling some of India's needs as well. For instance, to meet India's growing food needs, Africa can supply chickpeas to India.

ICRISAT's Indian base, the Indian NARIs and the ambitions of "India Inc". are critical for showing results in Africa. ICRISAT admits to having facilitated the passage of Indian private sector companies into Africa through providing advice, contacts, etc. In conversations with the author staff explained that ICRISAT helped Vibha Seeds & JK Agri Genetics Ltd. to find a natural market in Africa where the climate is similar to India (Box 12).[67]

Irrespective of what is behind the Africa thrust, ICRISAT has come to sit squarely in the agro-industrial business model against which smallholders in both continents are struggling. The small farmers with whom ADARSA works want to make food production and distribution more local, rather than going global. They also do not in any way endorse the 'land grab' that is being tacitly encouraged in Africa as a food security strategy for populous countries like India (Bhutani, forthcoming). ICRISAT and its NARIs partners from India will have to be particularly careful not to inadvertently step into potentially problematic areas until an African response to the phenomenon is developed and implemented.[68]

Box 12: Showcasing India Inc. in Africa

Vibha Seeds was one Indian company present at a trade fair organised as a part of the second India-Africa Forum Summit in Addis Ababa in 2011. Vibha is engaged in crop improvement research and production and marketing of superior quality seeds. It claims to have the largest seed processing facility in India, with 30 select seeds and over 200 products with over 40,468 hectares of hybrid seed production at Janampet in Mahabubnagar district of Andhra Pradesh. Vibha is framing a memorandum of understanding with the Government of Ethiopia to work on 20 select seeds. It is training 1,200 farmers, mostly smallholders, in methods of seeds production.

According to a spokesperson, "Vibha focuses on Ethiopia because of the good weather, soil, cheap labour, and gap in select seed availability. Select seeds in Ethiopia bring a profit of 400 to 500 percent, attesting to the shortage." The company has been engaged in making available drip irrigation system tools in Ethiopia for the last six years. Outside Ethiopia, Vibha is involved in Tanzania, Sudan, Mozambique, Nigeria, and Egypt.

Source: Indo-Asian News Service (2011)

[64] 'See ICAR webpage "ICRISAT initiated a partnership between India and Africa on agricultural research-for-development" at www.icar.org.in/node/2749'

[65] See announcement for recruitment on the ICRISAT website www.icrisat.org/careers/Agribusiness-Project-Coordinator.htm

[66] See ICRISAT Happenings newsletter at www.icrisat.org/newsroom/latest-news/happenings/happenings1532.htm#1

[67] ICRISAT staff in personal communication with the author in June 2012.

[68] See the Final Declaration of the first ever Pan African Land Grab Hearing – 13 August 2013 http://farmlandgrab.org/post/view/22515

The USA also uses ICRISAT-India for furthering its interests in Africa throughvarious channels, including United States Department of Agriculture work, USAID funding and several US university partnerships. ICRISAT's flyer USA and ICRISAT flags some of the initiatives (ICRISAT, 2011b).Several stand out for stating that they facilitate South-South co-operation, when they may simply be about furthering US interests in the African region.

The first such example is the use of India as a strategic partner in the Alliance for a new Green Revolution for Africa (AGRA) in which ICRISAT is also involved (GRAIN, 2007). Many farmers groups and ordinary people from across Africa are voicing their concerns about AGRA.[69] The Alliance brings together the very Foundation, namely Rockefeller, that gave support for the Asian GR and the biggest of the US philanthro-capitalists (BMGF), as well as 'experts' from big businesses (such as Monsanto Inc., that has an interest in marketing its GM technologies; and Yara International, the world's largest producer of nitrogen fertilisers).[70] The same model is being pushed in Africa through AGRA, without taking into account the negative impacts of GR in India and other Asian countries. There is also popular concern that to 'revolutionise' African small farming, GM crops and other proprietary technologies will be encouraged. In its first ever Africa Agriculture Status Report 2013, while AGRA makes mention of the growing public opposition to GM crops in Africa, it states that is best described as a fear of the unknown (AGRA, 2013).

The second example is ICRISAT and ICAR involvement in the watershed management work of the US-India Knowledge Initiative in Agriculture (KIA),[71] which aims to have a ripple effect in Africa.

However, there is no social backing for KIA in India. Groups working on sustainable smallholder agriculture in India find the initiative problematic on various fronts. Firstly, it was agreed with local populations without giving them any access to the KIA processes or its documents. Secondly, it pushes the very model of corporate agriculture against which smallholder farmers are struggling.

Apart from the above, ICRISAT is supporting the development of local seed companies under the West Africa Seed Alliance (WASA), 2007-2012. This began in 2005 with the support of USAID in Mali as a regional initiative. The work is aimed at developing a competitive seed industry. This work is now extending to Eastern and Southern Africa. ICRISAT's project on Harnessing Opportunities for Productivity Enhancement of Sorghum and Millets in SA and SSA (HOPE) is aimed at the entire sub-continent.

At the 40th anniversary events of ICRISAT in India, the Nigerian Minister for Agriculture announced the signing of a three-year collaborative agreement for rehabilitating and expanding groundnut production as one of the first major steps in restoring Nigeria's status as a dominant global producer and exporter of groundnuts (The Hindu, 2012b). This is precisely the frame in which ICRISAT sees its research, that in which the ultimate aim is global trade (ICRISAT, 2012e).

These types of 'South-South collaboration' are mostly about facilitating exchange of technologies among IARCs, NARIs and seed companies in different countries to bring them to export levels, rather than developing

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[69] Voices From Africa: African Farmers & Environmentalists Speak Out Against a New Green Revolution in Africa http://www.oaklandinstitute.org/voices-africa-african-farmers-environmentalists-speak-out-against-new-green-revolution-africa

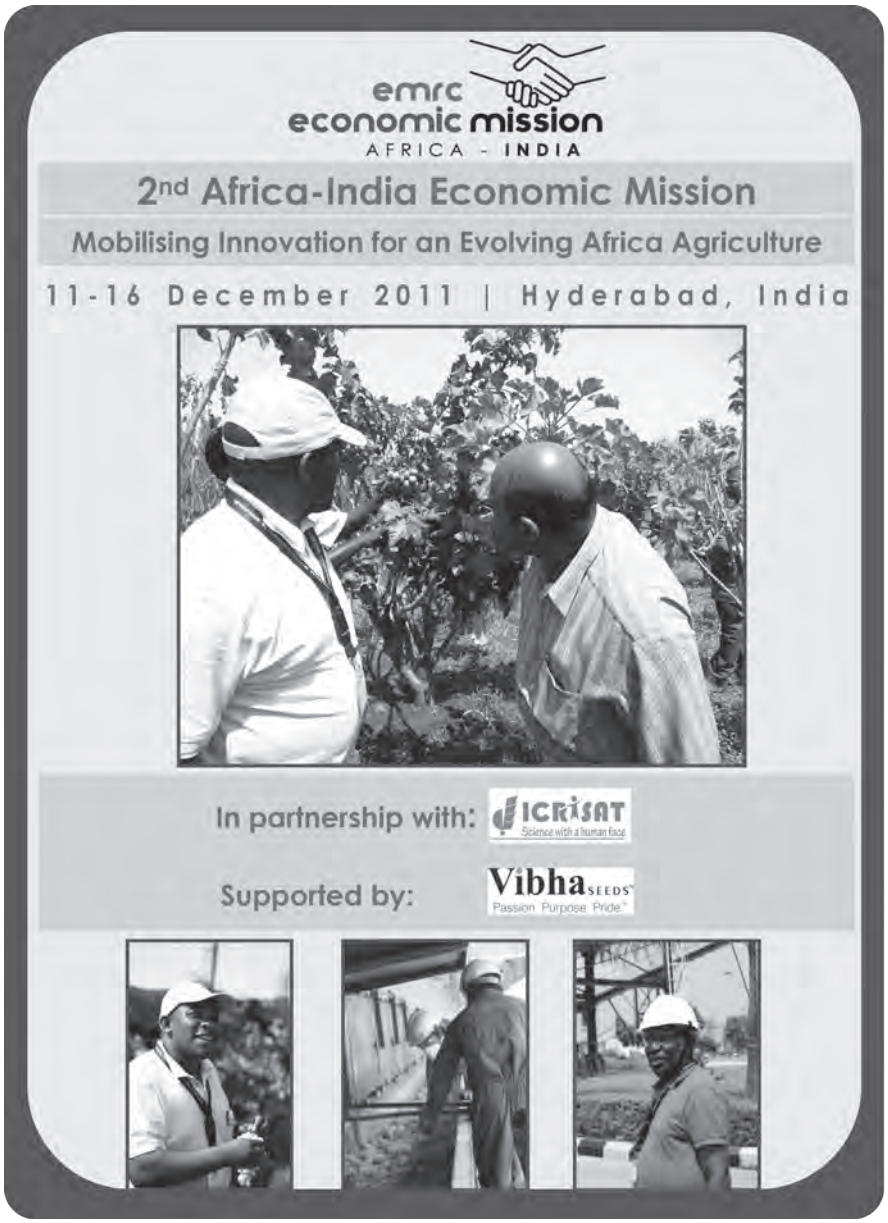
[70] BMGF remains AGRA's biggest donor since its inception in 2006. Bill Gates reportedly purchased 500,000 shares in Monsanto in 2010. Meanwhile, Yara established its Africa Programme in 2005 and through 2006-2008 it co-hosted the annual Africa Green Revolution Conferences (AGRC). The main focus therein was to bring in the large private sector and foster public-private partnerships for the African Green Revolution.

[71] Pursuant to the understanding on co-operation in agriculture articulated in the Joint Statement of US President George Bush and Indian Prime Minister Dr. Manmohan Singh on 18 July 2005 during the Indian PM's visit to USA, the Ministry of Agriculture, Government of India and US Department of Agriculture (USDA) agreed to work together for a new India – US Knowledge Initiative on Agriculture (KIA) Education, Research, Services and Commercial Linkages. The KIA Board included representatives from US MNCs such as Monsanto, Wal-Mart and Archer Daniels Midland.

indigenous technologies within SAT countries that respond to local needs.

While there is evidence that ICRISAT is increasingly reaching out to other countries in the SA region, as in Africa, the tone and tenor of these interventions also reflect its new market orientation. For instance, in April 2012, under the Nepal Government's Project on Agricultural Commercialisation and Trade, co-supported by the Federation of Nepalese Chambers of Commerce and Industry and the World Bank, ABI-ICRISAT pushed for more agri-business development.[72]

ICRISAT is well placed to have an overview of the diverse SAT regions in Asia and Africa. It is thus in a position to see not only the challenges of smallholder farming but also the strength of farmers' agriculture. Its South-South efforts ought not to foster a dependency syndrome, which makes farmers rely on solutions from outside. Literally shipping agricultural R&D products and services from India to Africa neither does justice to India's farmers nor to those in Africa.



Mobilising Innovation for an Evolving Africa Agriculture 11-16 December 2011, Hyderabad, India in partnership with ICRISAT, Confederation of Indian Industry and supported by Vibha Seeds Pvt. Ltd.
Source: http://www.emrc.be/documents/document/20120104180412-report-en_final.pdf

[72] See "ABI-ICRISAT showcases agribusiness interventions at Nepal workshop", April 2012 www.icrisat.org/newsroom/latest-news/happenings/happenings1515.htm#4

6. Closing remarks

ICRISAT's 40-year journey seems be taking a different path to that taken by the smallholders it seeks to serve. The changes both inside and outside ICRISAT mean that the Centre is increasingly challenged to deliver to its original partners. Outside its walls, small farmers have begun to seek solutions of their own, get organised and seek help where they need it, rather than remain in a state of dependency. The political demand for seed and food sovereignty, the climatic imperative for biodiversity and the social urgency for co-operation require agricultural R&D institutions to respond accordingly. While ICRISAT is acutely aware that it must respond to remain relevant, it seems to have re-charted its route to farmers along the way.

Global concentration

ICRISAT and the changes within it need to be understood in a wider context. As part of a global network of agricultural research institutes under the CGIAR Consortium, its control over R&D is neither entirely in its hands, nor in the hands of the small farmers of the SAT. While ICRISAT recognises the importance of public sector research, the penetration of the large corporate sector into global agricultural R&D is linked to the expansion of these corporations throughout the agricultural sector, and their concentration in the global market in general. There is worldwide concern about the eroding 'publicness' of agricultural research centres in general and their distancing from ordinary publics and small farmers. Moreover, the concentration of resources to keep such a global public sector set-up alive has consequences for the decentralisation required by diverse smallholder farming. One example is the concentration of local seeds in global and national gene banks. ICRISAT has the largest gene bank of all the CGIAR Centres and is required under international law to maintain these global international public goods. But such concentration shifts resources away from national and local-level farmer-led initiatives.

The ordinary non-farmer citizens are so removed from the IARCs and NARIs that many don't even know of the existence of these institutions. Democratising AR4D will imply not only putting farmers at the centre, but also opening up the R&D system to public scrutiny, allowing ordinary people to ask questions and influence research to make it more meaningful and accountable for their everyday needs.

The SAT farmer: partner or customer?

Small farmers feel they are losing an ally in their struggle to roll back privatisation. Working more with the large private sector has meant that ICRISAT has had to embrace a corporate ethos and view of agricultural progress and modernity. This in part explains its pre-occupation with modern biotechnology, modern markets and modern-day IP standards and their enforcement. Whereas in the past it would challenge any endeavour to privatise any inputs for subsistence farming, its new partnerships have pushed it into a role of garnering public acceptance of industries' proprietary technologies. It has also become more accepting of privatisation. Its open access on-line tools and free seed handouts to farmers might give the impression of 'openness', but the real test is how it accommodates the demands of the corporations, particularly in the area of intellectual property.

ICRISAT's initial holistic focus on local level farming systems, watersheds and village economics in addition to crops, has gradually become marginalised. Its choice of technology – such as genomics – prevents meaningful participation by small farmers and is increasingly reductionist. The Centre justifies this by saying it has moved 'upstream' in the research spectrum (ICRISAT, 2013b). Such scientific elitism runs counter to development goals that advocate building the inherent capacities of farmers. Driven by its resource constraints, ICRISAT has also chosen to relinquish the development of 'finished products', leaving that to its many large private sector partners through the HPRC and the ABI. The implications are that these products must be purchased by farmers. ICRISAT's new donors, partnerships and research 'clients' are not only changing its face, but also its science.

ICRISAT's increased dependence on corporate funding – whether it comes directly from the large companies or the foundations that are their fronts – increases its vulnerability to interest-based funding. A message this paper is trying to get across is that public R&D, particularly for centres such as ICRISAT and the public sector NARIs, must remain public. Public money pushes a different political frame, it is citizen-motivated funding. That is how it can even be made accountable.

Market-friendliness

ICRISAT truly seems to believe that the best way for its R&D outputs to reach small farmers is through the market. Its IMOD thinking – inclusive market-oriented development – has seeped into almost every aspect of its work. Therefore, rather than doing core agricultural research with farmers, there is now much more emphasis on the marketing of new technology to farmers. It attempts to 'include' farmers in markets, trying to link them to the value chain or reach the hitherto unreachable through their hybrid and/or GM seed bags, marketable products and services. This transfer of technology model of agricultural R&D then looks at technology adoption and diffusion rates to gauge the success of IARCs like ICRISAT. However, groups like ADARSA are precisely pointing to how the determinants of innovation are increasingly working against the public good by putting corporations – instead of small farmers – at the heart of the governance of food and agricultural research. This dissonance between paradigms explains the popular distrust in and cynicism about the formal agricultural R&D system. Clearly, ICRISAT can be more responsive to farmers if it speaks for them, rather that speaking as if for the market. The latter can even compromise its ability to speak for science.

India's role

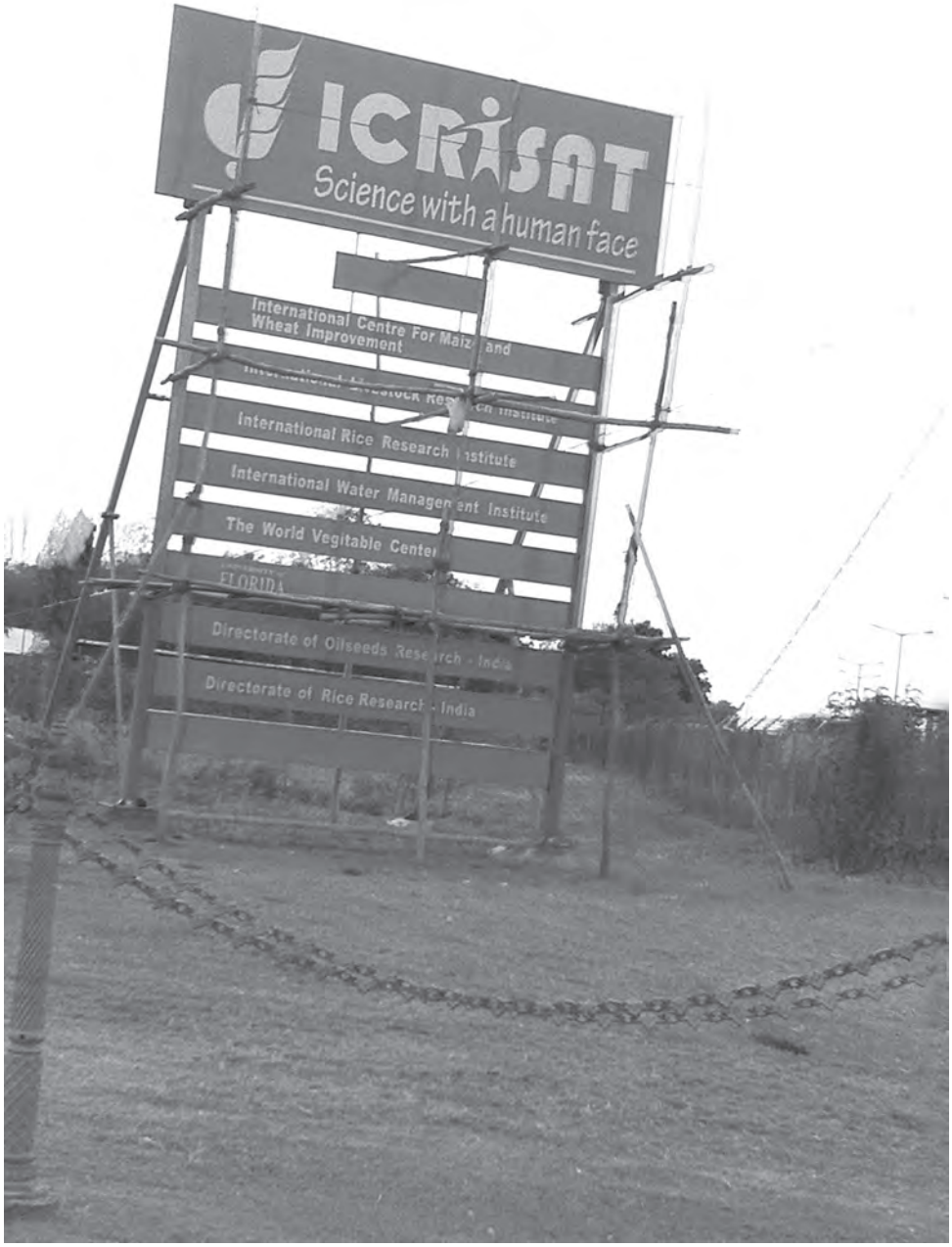
India is poised to be the most populous country in the world, and hunger and nutrition remain prevalent among its largely rural population. There is growing public criticism of the NARIs in India and their distance from the real problems of small farmers. The GoI, its higher bureaucracy and the scientific elites have not used the CGIAR Centres enough to address these problems at home. Meanwhile, the GoI has emerged as one of ICRISAT's top six donors in recent years. Yet as corporate money begins to make deeper inroads in both national and international public institutions, the need for retaining the publicness of both the institutes and the funding can not be overemphasised. The ICAR and its senior management work very closely with ICRISAT and so share part of the responsibility for how ICRISAT has turned out today. India could play a much larger role in keeping the CGIAR rooted to the needs of the developing world. In that way it can even re-shape the South-South relationships, particularly with Africa. Both continents have an astounding body of farmers' innovations on which to build. Given the fact that farming is essentially a local act, it needs to be determined by local people. For that very reason, neither India nor ICRISAT ought to be telling African farmers what they should sow and grow.

India's role also urges us to rethink the role of the state in general in agricultural R&D, especially in an increasingly inter-connected

world where national becomes international very quickly. If lavish private funding is reducing centres of innovation to self-serving product delivery systems, then the state is in turn reduced to a being a supplier of inputs to small farmers, rather than a friend in process-innovation.

ICRISAT today can partly be understood as a product of its times. But the changes within it have not reflected the changes outside, in which people have been organising themselves to challenge science and technology. Many are flagging the need for a paradigm shift in research (Pimbert, 1994; Pimbert et al., 2011), while the international peasants' movement is calling for farmers, whether from the SAT or elsewhere, to cease to be treated as participants in someone else's R&D paradigm (Annex IX; Mehta et al., 2010; UNCTAD, 2013).

In the years ahead ICRISAT will be judged not by how it stood and what 'pathway' it tread, but by how it helped the smallest of farmers to stand by themselves with their own science.



ICRISAT & others • Photo credit: Shalini Bhutani

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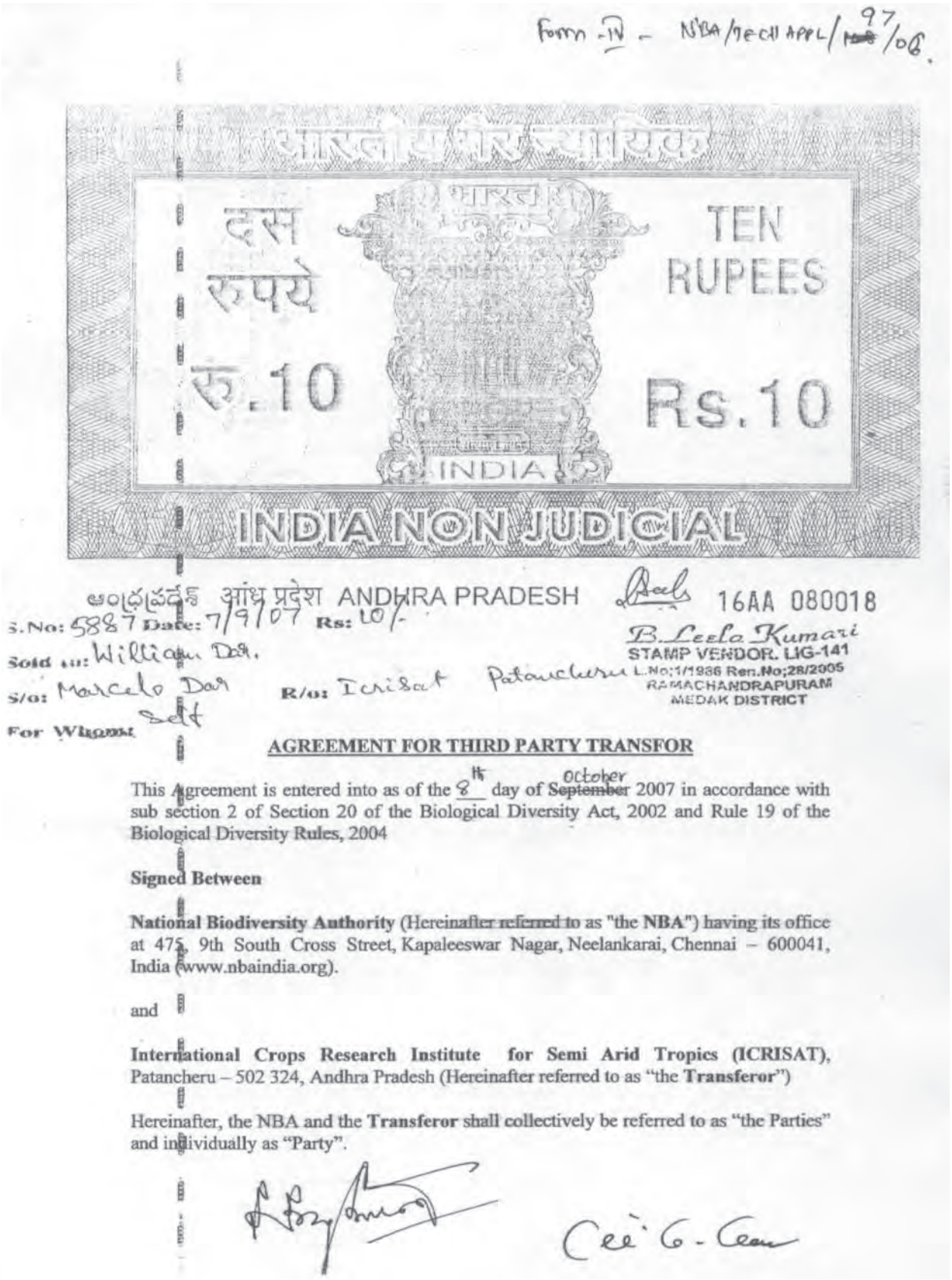
Annexures

Annex I: Full text of agreement between India's National Biodiversity Authority and ICRISAT for the export of groundnut transgenic seeds to South Africa for testing



Form -IV - NBA/TECH APPL/97/06.

भारत सरकार

दस रुपये TEN RUPEES

रु.10 Rs.10

INDIA

INDIA NON JUDICIAL

ఆంధ్రప్రదేశ్ आंध्र प्रदेश ANDHRA PRADESH 16AA 080018

S.No: 5887 Date: 7/9/07 Rs: 10/-

Sold to: William Dar.

S/o: Marcelo Dar R/o: Icrisat Patancheru

For Whom: Self

B. Leela Kumari
STAMP VENDOR. LIC-141
L.No:1/1986 Ren.No:28/2005
RAMACHANDRAPURAM
MEDAK DISTRICT

AGREEMENT FOR THIRD PARTY TRANSFOR

This Agreement is entered into as of the 8th day of ~~September~~ October 2007 in accordance with sub section 2 of Section 20 of the Biological Diversity Act, 2002 and Rule 19 of the Biological Diversity Rules, 2004

Signed Between

National Biodiversity Authority (Hereinafter referred to as "the **NBA**") having its office at 475, 9th South Cross Street, Kapaleeswar Nagar, Neelankarai, Chennai – 600041, India (www.nbaindia.org).

and

International Crops Research Institute for Semi Arid Tropics (ICRISAT), Patancheru – 502 324, Andhra Pradesh (Hereinafter referred to as "the **Transferor**")

Hereinafter, the NBA and the **Transferor** shall collectively be referred to as "the Parties" and individually as "Party".

WHEREAS:

NBA has been established by the Government of India under the powers granted to it by section 8 of the Biological Diversity Act, 2002 (No. 18 of 2003). Under the said Act, NBA is the authority to permit access to any biological resources and/or associated knowledge found within the territory of India.

The **Transferor** (ICRISAT) is an autonomous, non-profit, apolitical, international organization for science based agricultural research for development. Established in 1972, it is one of the 15 Centers under the aegis of the Consultative Group on International Agricultural Research (CGIAR). ICRISAT works to improve the farming systems of the semi-arid tropical (SAT). ICRISAT has accessed the Biological Resources and/or associated knowledge for the purposes of Research and now is interested in transferring the accessed Biological Resources to the Transferee.

The **Transferor** has made an application in Form IV, under Rule 19 of the Biological Diversity Rules 2004 to seek approval from the NBA to transfer the accessed biological resources and/or associated knowledge to the Transferee for the purposes of Commercial Utilisation/Research.

The Parties hereto agree as follows:

1. Definitions

In this Agreement:

Act means the Biological Diversity Act, 2002 (Act 18 of 2003) and includes the Rules/Regulations/notifications made under it.

Biological Resources: means Biological Resources as defined in the Act, which the Transferor accessed for the purposes of Commercial Utilisation/Research as described in Schedule A to this Agreement.

Transferee: means the person/Company to which the **Transferor** intends to transfer the Biological Resources.

2. GRANT OF APPROVAL

2.1 The **Transferor** requests for approval to transfer the Biological Resource and/or associated knowledge and the NBA hereby grants the approval subject to the terms and conditions set forth in this Agreement and compliance with all other laws in force in India.

2.2 The **Transferor** shall transfer the Biological Resources and/or associated knowledge only on the execution of a written agreement with the Transferee. The Agreement shall impose a mandatory obligation on the **Transferee** to comply with all the terms and

conditions imposed on the **Transferor** by the approval agreement executed on ..... Day of September 2007, which agreement shall be attached as an appendix to the written agreement between the **Transferor** and **Transferee**.

Provided that, in the absence of any agreement between the NBA and the **Transferor**, the **Transferor** shall attach the standard agreement (in accordance with the purpose of the transferee) as available with the NBA and all clauses therein shall be binding on the **Transferee**.

2.3 The **Transferee** shall have no rights to directly access the Biological resource and/or associated knowledge other than from the Transferor.

2.4 **Transferor** hereby undertakes to notify NBA immediately, if the **Transferee** or any third party makes any breach of this Agreement or the provisions of the Act comes to his knowledge.

3. Term

3.1 This Agreement, unless terminated as provided herein, shall remain in effect for a period of one year from the date on which the approval is given by the NBA to the **Transferor** for the transfer of the Biological Resources and/or associated knowledge.

All Clauses of the agreement attached as an appendix to the agreement between the **Transferor** and the **Transferee** shall apply in all aspects where this contract is silent.

This Agreement has been executed in Duplicate. Each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF this Agreement has been executed by duly authorized representatives of the Parties on the day and the year first mentioned

For National Biodiversity Authority:

Prof. Dr. S. KANNAIYAN
Chairman
National Biodiversity Authority
475, 9th South Cross Street,
Kapaleeshwar Nagar, Neelankarai.
Chennai - 600 041.

Witnesses:

1.

2.

Administrative Officer
National Biodiversity Authority
Chennai - 41.

For the Transferor (ICRISAT):

Dr William D. Dar
Director General
ICRISAT
Patancheru-502 324
Andhra Pradesh, India

1.

2. Dr Barry I. Shapiro
Director
Project Development & Marketing

J.D.H. Keatinge

SCHEDULE A

2) K. Ch
(K. CHITRARASU)
Advisor (Law)

SCHEDULE-A

Groundnut GRAV T3 Seed Material

No	Event Number		PCR(status)		Number of seeds
1	1301 : GRAV	1- 1	JL 24	+ve	10
2	1301 : GRAV	1- 2	JL 24	+ve	10
5	1301 : GRAV	2- 1	JL 24	+ve	10
6	1301 : GRAV	2- 2	JL 24	+ve	10
9	1301 : GRAV	3- 1	JL 24	+ve	10
10	1301 : GRAV	3- 2	JL 24	+ve	10
13	1301 : GRAV	4- 1	JL 24	+ve	10
14	1301 : GRAV	4- 2	JL 24	+ve	10
17	1301 : GRAV	5- 1	JL 24	+ve	10
18	1301 : GRAV	5 -2	JL 24	+ve	10
21	1301 : GRAV	6- 1	JL 24	+ve	10
22	1301 : GRAV	6 -2	JL 24	+ve	10
25	1301 : GRAV	7- 1	JL 24	+ve	10
26	1301 : GRAV	7 -2	JL 24	+ve	10
29	1301 : GRAV	8- 1	JL 24	+ve	10
30	1301 : GRAV	8 -2	JL 24	+ve	10
33	1301 : GRAV	9- 1	JL 24	+ve	10
34	1301 : GRAV	9- 2	JL 24	+ve	10
37	1301 : GRAV	10- 1	JL 24	+ve	10
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41	1301 : GRAV	11- 1	JL 24	+ve	10
42	1301 : GRAV	11- 2	JL 24	+ve	10
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1

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14	Strain 7 : GRAV	4-3	JL 24	+ve	10
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17	Strain 7 : GRAV	5-2	JL 24	+ve	10
21	Strain 7 : GRAV	6-2	JL 24	+ve	10
22	Strain 7 : GRAV	6-3	JL 24	+ve	10
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11	Strain 7 : GRAV	12 -1	ICGS 44	+ve	10

2

SCHEDULE-A

12	Strain 7 : GRAV 13 -1	ICGS 44	+ve	10
13	Strain 7 : GRAV 17 -1	ICGS 44	+ve	10
14	Strain 7 : GRAV 18 -1	ICGS 44	+ve	10
15	Strain 7 : GRAV 19 -1	ICGS 44	+ve	10
16	Strain 7 : GRAV 20 -1	ICGS 44	+ve	10
17	Strain 7 : GRAV 21 -1	ICGS 44	+ve	10
18	Strain 7 : GRAV 26 -1	ICGS 44	+ve	10
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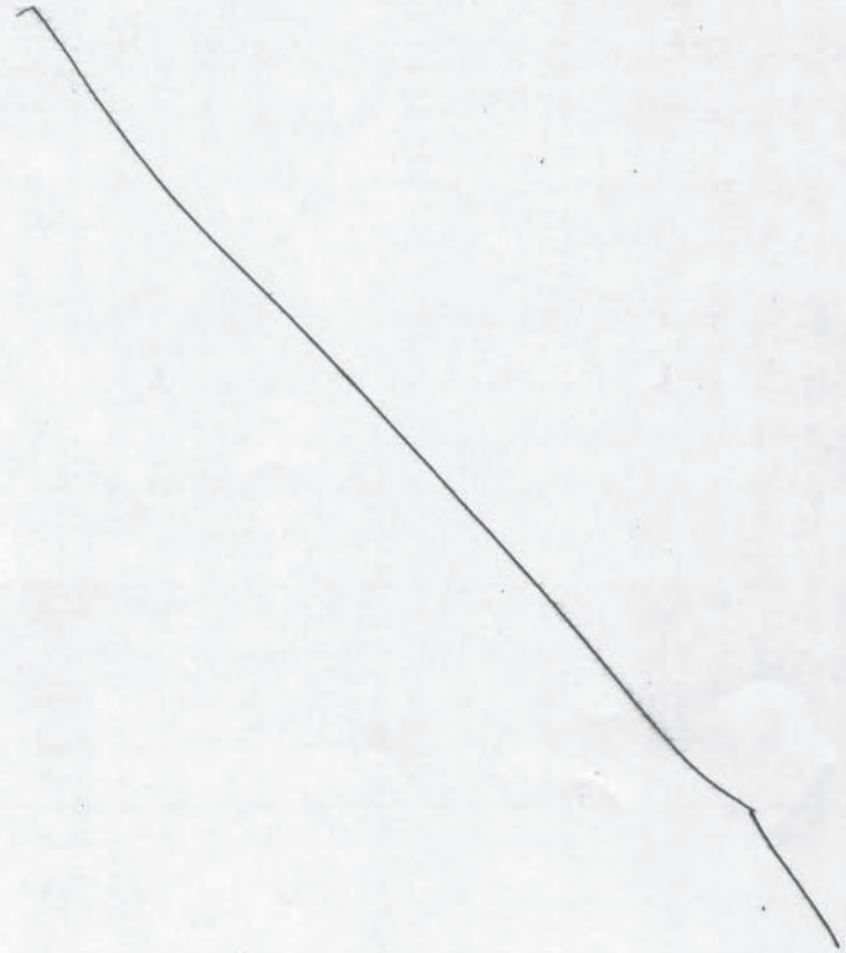
	Control	JL 24-2		10
	Control	ICGS 44-1		10
	Control	ICGS 44-2		10



3

Annex II: MoU between India's State Government of Karnataka and ICRISAT

Memorandum of Understanding (MOU)

Between

Government of Karnataka

and

International Crops Research Institute for Semi Arid Tropics (ICRISAT)
Patancheru 502 324, Andhra Pradesh
(On behalf of CGIAR Centers)

for

"Improving Rural Livelihoods through Innovative Scaling-up of Science-led Participatory Research for Development in Karnataka"

6 June 2012

Improving Rural Livelihoods through Innovative Scaling-up of Science-led Participatory Research for Development in Karnataka

This Memorandum of Understanding dated 6 June 2012 is made between:

Government of Karnataka, Bengaluru, (hereinafter referred to as "GoK").

and

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Andhra Pradesh 502 324 (hereinafter referred to as the "Consultants" on behalf of CGIAR Centers included in this consortium) represented by, Director General.

Whereas:

The Hon'ble Chief Minister, Govt. of Karnataka, in his budget speech for 2012-13, has announced that "in order to ensure that our farmers in the coming years are protected from facing frequent drought conditions, steps have been taken to formulate special action plans in collaboration with international level scientific institutions such as International Crops Research Institute for the Semi-Arid Tropics, International Rice Research Institute, Maize and Wheat Research Institute, International Animal Husbandry Research Institute and International Food Policy Research Institute. Right strategies will be designed with assistance from these institutes, and implemented on pilot basis in some taluks/districts, which will then be extended to other areas".

- GOK require the Consultants to supply certain services under the terms of this MOU as per Section 3,

and

- The Consultants, having represented to GOK that they have the professional skills, personnel and technical resources, have agreed to provide the services when required during the period of the Contract for "Improving Rural Livelihoods through Innovative Scaling-up of Science-led Participatory Research for Development in Karnataka."

It is hereby agreed as follows:

1. Documents

The Contract shall comprise the following documents:

Section 1.	Form of Contract (this document)
Section 2.	Conditions of Consultancy Contract
Section 3.	Terms of Reference/Scope of Work
Section 4.	Schedule of Prices

2. Provision of Services

The Consultants agree to provide the required services in accordance with the terms during the contract period.

3. Financial Limit

The total financial limit for this project is Rs. 29.00 Crores for ICRISAT to develop, evaluate and coordinate the implementation of the interventions and to provide technical backstopping through a consortium of enlisted CGIAR Centres working in India.

4. Payment

In consideration of the Services performed by the Consultants under the terms of this Contract, GOK shall make to the Consultants such payments and in such manner as provided in Section 4 - Schedule of Prices, within the financial limit specified.

5. Commencement of the Services

This Contract will be effective from 6th June 2012 and shall be in force until on 5th June 2016.

The Parties hereto agreeing to the terms and conditions stated herein have signed this Contract in two original counterparts as of the date hereunder mentioned.

For and on behalf of
Government of Karnataka (GOK)

Signature: _____
Additional Chief Secretary and
Development Commissioner

Date: 06/06/12

For and on behalf of the CGIAR Institutions

Signature: _____
Director General, ICRISAT,
Hyderabad

Date: 6 June 2012

3

Annex III: Open letter to ICRISAT from the Deccan Development Society

DECCAN DEVELOPMENT SOCIETY
VILLAGE PASTAPUR, ZAHEERABAD MANDAL
MEDAK DISTRICT
ANDHRA PRADESH

April 15, 2005

The Director General
International Crop Research Institute for Semi-Arid Tropics
Patancheru
Medak District
Anhdra Pradesh, India

Dear Director General,

We, the farmers of Medak District in Andhra Pradesh, have seen ICRISAT from its inception and have watched it grow with pride.We were delighted that the CGIAR had chosen our district to set up a Centre to research on the crops that we have been growing in this region since millennia.We were excited that ICRISAT will bring experts from all over the world to look at the knowledge accumulated in our part of the world for thousands of years on these crops, our soils and our farming systems. We thought these experts will build a new agriculture on the foundations of our knowledge.

This did happen for some years. We fondly remember those scientists who came to us and did long participatory research on pigeonpea, on chickpea and tried to build watersheds on the foundation of our knowledge. But now it seems all this is the story from a very distant past. Over the last few years we, farmers from these resource poor regions seem to be completely out of your agenda. You seem to be blinded by big business, biotechnology and the agenda they have brought in. We clearly understand that this will totally eliminate small farmers like us from your work. We understand by being in this new league you have firmly shut the ICRISAT doors on we women who have been the backbone of millet farming by saving seeds, by keeping alive biodiversity on our farms.

Incidentally, BIODIVERSITY. Dear ICRISAT, do you remember this word at all? Or has it fallen completely out of your dictionary? We do remember that several years ago, you used to have an entire division devoted to it. But we hardly read it about it in your reports and pronouncements these days. We understand that Biotechnology is the new mantra with you and you have been so totally seduced by it that you have probably started mistaking it for Biodiversity?

We also understand that you are talking the language that Life[destroying] Industry talks. You are talking about biofortification of crops. You came to build life in all its integrity. Not to split it into small atoms, disintegrate it, and like a cheap mechanic, start techno-fixes.

What a fall, ICRISAT!

And what do we hear from you these days? An institution, where scientists toiled hard on farmers fields, worked along with them, built up constant dialogues with them, is now turning over its Board Rooms to transnational corporations like Syngenta whose mandate is to replace farmers from agriculture and turn it into a Corporate stock exchange! Is this just, ICRISAT? Is this why you were born?

And incidentally, what is your current mandate, ICRISAT?

We understand you have set up a biotech park, you are gleefully opening up your facilities to private industry for a small fee? Is this what they call Sell Out?

Who did you ask before you did it ICRISAT? You were built with public money contributed with the taxes of billions of us, farmers, from all over the world. Did we ask you to turn out into a cheap function hall, which willingly hires out its facility to anyone who gives it some money?

Having done this, are you not brokering our resources to private business?

And let us come to the new threat. You and your sister institutions in CGIAR, we believe, are also planning to peddle our bioresources to private business. Will that not be counted as a crime against humanity ICRISAT and CGIAR?

Incidentally, we see a large board in front of your palatial complex declaring: ICRISAT: SCIENCE WITH A HUMAN FACE.

Is this true? Do you have a Human Face? Why has it been kept so invisible from us, ICRISAT?

We have started being terrified of you ICRISAT. You have lost our trust.

Once upon a time, in trust, we handed over to you, a large number of germplasms. The seeds we had nourished like our own children. Seeds which were a product of generations of our own knowledge.

Now we are afraid that you will sell that out to the biggest bidder. Because you claim to be cash starved.

We will not let that happen, ICRISAT.

Please hand us back our germplasm. Close down your gene banks. They have already turned into Gene Morgues. Now they will be turned by you into seeds for predatory corporate profits. THIS IS OUR HERITAGE, GIVE IT BACK TO US.

If you are cash starved, let us fight together. We don't want you to sell the family silver, the heritage of humanity for your own survival. We don't want you to sell your soul to the industry. Let us ask all our governments to put more money in you. And build ICRISAT into an independent scientific institution working with dignity and being proud of its independence.

This so that you will start a new era of research will be farmer demanded, farmer designed and farmer led, If you are incapable of it, please admit it openly.

If you are incapable of it, isn't it better that you close down, ICRISAT.

We will be very sad for it. You are like a grown up daughter of ours. Your fading out from our midst will be very sad for us.

But if with your closure we can prevent a far greater tragedy to farming communities all over the world, we might even accept it as inevitable.

Think if you can.

And do let us know what you think.

With best wishes for your survival with dignity, pride and Human face.

If that is possible.

Signed

Begari Sammamma

[Village Bidakanne, Jharasangam Mandal, Medak District]

Begari Laxmamma

[Village Humnapur, Nyalkal Mandal, Medak District]

Dandu Swaroopamma

[Village Edakulapalle, Jharasangam Mandal, Medak District]

Moligeri Chandramma

[Village Bidakanne, Jharasangam Mandal, Medak District]

ON BEHALF OF THOUSANDS OF WOMEN FARMERS FROM MEDAK DISTRICT, WHO HAVE SIGNED THIS LETTER ON BEHALF OF BILLIONS OF OUR SISTERS ALL OVER THE WORLD.

Annex IV: MoA between ICRISAT and Junagadh Agricultural University, Gujarat
December 2006

Memorandum of Agreement

between

International Crops Research Institute for the Semi-Arid Tropics ICRISAT)

and

Junagadh Agricultural University (JAU)

Preamble

This Memorandum of Agreement (MOA) is made between the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the Junagadh Agricultural Univeristy (JAU), collectively called "the Parties", to engage in cooperative activities of common interest and mutual benefit.

ICRISAT is an autonomous, nonprofit, international research organization for science-based agricultural development. It is one of the 15 Centers under the aegis of the Consultative Group on International Agricultural Research (CGIAR). ICRISAT works to improve the farming systems of the semi-arid tropical (SAT) areas of the developing world through integrated genetic and natural resource management strategies, including genetic conservation and improvement of five crops that are particularly important in the diets of the poor: sorghum, pearl millet, groundnut, chickpea, and pigeonpea. ICRISAT carries out its mission by forming research partnerships with government, non-governmental, and private sector organizations in developing countries, and linking these partners to advanced research institutions worldwide.

The Junagadh Agricultural University (JAU) came into existence on May 1, 2004 with it's headquarters at Junagadh, Gujarat, India. It has been split up from the erstwhile Gujarat Agricultural University. JAU has about 1000 hectares land for various purposes. The goal of the university is to serve as premier educational and research organization in the field of agriculture and allied sciences and to integrate research and extension education. Entire research in agriculture and allied field is guided and coordinated by the Director of Research. The University has provided lead to entire state and other parts of the country in exploiting hybrid vigour in few crops.

ICRISAT and JAU, recognizing the complementarity of their objectives and the need to facilitate the implementation of a research activity on sustainable development in the semi-arid tropics through management of natural resources for improving rural livelihoods and protecting the environment, hereby enter into this Memorandum of Agreement (MoA) and agree to cooperate as detailed hereunder:

Article I

ICRISAT and JAU will cooperate so as to

i) Initiate and conduct investigations to select the appropriate management options for improving livelihoods through sustainable use of natural resources at watershed-scale through a holistic approach.

ii) Strengthen the capability of national agricultural research institutions to develop their own technologies and management systems and to adapt suitable systems generated by ICRISAT and JAU through the consortium and partnership approach.
iii) Develop suitable policies and institutional support for sustainable management of natural resources mainly water and land for maintaining biodiversity and improving livelihoods.
iv) Facilitate dissemination and sharing of information by conducting co-sponsored seminars, conferences and workshops as necessary.

Article II

v) ICRISAT and JAU will, in order to implement Article I, jointly develop workplans, approved by the Director General of ICRISAT and the Director of Research, JAU or their designees and incorporating specific projects, from time to time.
vi) The workplans will specify the collaborative project, funding sources, duration and modalities of execution of the project and delineate the obligations and responsibilities of ICRISAT and JAU.
vii) ICRISAT and JAU will nominate project managers, named by the Director General, ICRISAT and Director of Research, JAU. The project managers will meet from time to time to develop the workplans and review the progress of their implementation.
viii) The personnel responsible for the execution of projects and workplans will be responsible for fulfilling agreed requirements as set out in the relevant workplans, agreements and contracts.
ix) Specific administrative, financial and operational arrangements will be agreed through exchange of letters as required.

INTELLECTUAL PROPERTY RIGHTS

ICRISAT and JAU recognize the importance of Intellectual Property as a component of the agricultural research agenda. ICRISAT and JAU reserve any and all intellectual property rights, without limitation discovered or produced as a result of the cooperation related to this MoA. ICRISAT and JAU will make available to their developing country partners results of activities by the most appropriate mechanism, which may include seeking of statutory IP protection where appropriate. No information or invention developed as a result of this cooperation will be protected through any form of statutory or non-statutory intellectual property right mechanism by either collaborator without express written approval from the other.

Results from this joint collaborative work may be used by either or both parties with due recognition of each party's contribution. Research findings as a result of the joint collaborative work of the two parties will be published in the public interest. Research findings published by either party will give credit to the other party's contribution, but the party publishing them will be entirely responsible for the conclusions and interpretation reported.

References and providing links by one party to the other on web pages and similar documents in the public domain, and their modifications, shall require mutual and prior approval of the parties.

DISPUTE RESOLUTION

Should there be any dispute or difference of opinion regarding this Agreement, then in that event, both Parties will make all efforts to amicably settle such disputes. Efforts at reaching an amicable settlement will be deemed to have failed as soon as one of the parties informs the other in writing about such a deadlock.

If efforts at amicable settlement fail, all disputes arising out of this contract or its validity will be finally decided in accordance with the provisions of the Indian Arbitration and Conciliation Act 1996, as amended from time to time. The arbitration proceedings shall be headed by three arbitrators, one each to be appointed by the two parties and the third arbitrator to be appointed by the two arbitrators already appointed.

The arbitral proceedings shall be held at Hyderabad, Andhra Pradesh, India, and conducted in English language.

VALIDITY

The MoA will enter into force from the latter of the two dates upon which the parties have executed the agreement and shall be valid for a period of 5 years. The MoA can be extended for further periods on mutually agreed terms and conditions.

The MoA is terminable at the option of both ICRISAT and JAU by a notice of three months in writing on either side. Such termination shall not affect the execution and conclusion of specific activities in effect under terms of supplemental Project Agreements, nor publication and dissemination of results of research in progress.

IN WITNESS WHEREOF, the duly authorized representatives of the Parties have agreed and executed this Agreement in two originals on the dates mentioned below with the signatures.

William D Dar Director General ICRISAT Date: 21 NOV 2006	Vice Chancellor Junagadh Agricultural University Date: 19 Dec 2006

Annex V: CGIAR Center case studies

1. Limited Exclusivity Agreements

ICRISAT's Hybrid Parents Research Consortia (HPRC)

ICRISAT's HPRC programs, established in 2000, provide an example of a time-Limited Exclusivity Agreement. Private sector seed companies become members of a consortium by paying a nominal membership fee and signing a consortium agreement. Member companies participate in annual research planning meetings, contribute hybrids in ICRISAT-organised hybrid evaluation trials (on-farm and on-station), and have 3-year preferred access to the improved parental lines developed by ICRISAT, useful for the production of sorghum, pearl millet and pigeon pea hybrid seed. All ICRISAT-bred parental lines retain a Research Exemption for further research and breeding by all public sector partners. As these materials fall under the International Treaty's category of "Material Under Development", an additional Material Transfer Agreement (MTA) is applied along with the SMTA. Parental lines can be used by the private sector seed companies for making hybrids (often using one of their own proprietary parental lines) and they can register these hybrids for sale in a country.

The main objective of the HPRC is to capitalise on the private sector's expertise in marketing hybrid seed, thus making such improved hybrids available earlier than normal to farmers, while attracting private sector seed companies to support the breeding research conducted by ICRISAT. The impact of the ICRISAT-derived/private sector distributed improved pearl millet and sorghum materials, is well documented in several studies including Chapter 121. Every year, an estimated US$650,000 is provided to the ICRISAT sorghum, pigeon pea and pearl millet breeding programs through the consortia to support breeding research that is consistent with ICRISAT's mission, mandate and agreed research agenda.

Are these Limited Exclusivity Agreements necessary for materials to reach the smallholder farmer in India?

ICRISAT has learned that this 3-year time-limited exclusivity, where HPRC members can benefit from the sale of hybrids before non-members, is important to provide an incentive for the HPRC members to join the consortia. Without this option of Limited Exclusivity Agreements, ICRISAT would be faced with inefficient mechanisms to deliver hybrids to farmers and thus to maximise global access to these materials.

Source: Consortium Office, 6 March 2012 - CGIAR IA Principles

Annex VI: ICRISAT Press Release

New Delhi, India (13 July 2013) – *The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the National Agricultural Innovation Project (NAIP) of the Indian Council of Agricultural Research (ICAR) will be holding a two-day Agri-Tech Investors Meet at the NASC ¬Complex, New Delhi on 18-19 July 2013.*

The two-day meet is being organized with the Federation of Indian Chambers of Commerce and Industry (FICCI) as industrial partner, and the Indian School of Business (ISB) Munjal Institute for Global Manufacturing as knowledge partner.

The Agri-Tech Investors Meet is a unique technology commercialisation platform that will showcase ready-to-commercialize agri-technologies from different sectors of agriculture and promote business incubation services. To be featured are presentations of agro-technologies developed under the NAIP and pre-selected through business-to-business (B2B) meetings. The 22 Business Planning and Development (BPD) Units of NAIP will also be featured to promote its incubator services for agro-enterprises and for small and medium enterprises (SMEs). The event will be attended by a wide range of participants, from industry officials, scientists, entrepreneurs and incubator professionals.

"By helping nurture innovations and entrepreneurship in agriculture through its Agri-Business Incubation (ABI) program, ICRISAT is fulfilling its mission to help eliminate poverty and improve livelihoods of smallholder farmers in the drylands. The Agri-Tech Investors Meet, in particular, will serve as a platform for promoting incubator services to start-ups, such as providing innovators an opportunity to explore and incubate their ideas to facilitate technology commercialisation through public-private partnerships," said ICRISAT Director General William D. Dar.

Highlighting the importance of the meet, ICAR Director General S Ayyappan said, "Indian agriculture is full of challenges and opportunities. To accelerate agricultural growth, the way forward is to create a robust entrepreneurship climate within the sector. The Agri-Tech Investors Meet seeks to promote entrepreneurship in agriculture and accelerate the successful development of entrepreneurial companies and activities through an array of business support resources and services," Dr Ayyappan added.

The conference will showcase more than 70 ready-to-commercialize agro-technologies from different agricultural sectors–crops, horticulture, food technology, veterinary, agri-engineering, agri-inputs, and fisheries. In addition, B2B meetings will be held with over 60 top-level scientists from ICAR.

In 2009, ICAR through the World Bank-funded NAIP set up ten BPD units – five in state agricultural universities (SAUs) and five in ICAR Central Institutes – to promote agribusiness in the country through technology commercialisation and by nurturing agricultural innovations through business incubators. These incubators which are being mentored by the ABI program of ICRISAT, have led to the formation of Network of Indian Agri-Business Incubators (NIABI).

Source: http://www.icrisat.org/newsroom/news-releases/icrisat-pr-2013-media17.htm

Annex VII: Raita Teerpu: Farmers' Verdict

5 December 2009

Between December 1st and 3rd, thirty of us, farmers and farm labour, women and men, gathered as a jury of farmers at the Fireflies Intercultural Centre near Bengalooru and heard the depositions on agricultural research from a panel of expert witnesses working in various sectors of agricultural research, governance, academia, farmer movements, pastoralism and consumer groups. Having heard these witnesses, we have strongly felt that there is a need for a fundamental shift in agricultural research keeping in view the interests of small and marginal farmers, women farmers and farm labour in this country. In this context, on this day, December 5, 2009, we are placing this Verdict in front of the government, policy makers, universities, agricultural scientists and all those who are interested and responsible for the future of the farmers of this country.

1. Today the farmer in this country is unable to return to traditional farming nor can he pursue expensive modern farming practices. At this critical juncture there is a great need for pro- farmer agricultural research.
2. Government must seriously recognise farmer innovations, respect such innovators and suitably compensate them just the way they compensate scientists in the formal institutions. Such innovations must get sufficient publicity.
3. We don't want research in hybrid crops which demand repeated purchase of expensive and chemical fertilisers and pesticides. Instead we demand research on local landraces that are adaptable to their ecosystems, are drought resistant, provide quality and tasty food and fodder and can be produced by the farmer himself.
4. Information on agricultural research done in public private partnership must be transparent and accessible to farmers.

5. Agricultural universities and other public sector research institutions must make farmers partners in their research and offer an equal share of the profits resulting out of this research to farmers.
6. When private/multinational corporations conduct farm trials on the fields of their own or on farmers fields the effects of these trials on farmers' health, the changes in the soil and the impact on the surrounding environment must be monitored by citizen groups that include farmers. This information should be made known every year to the farming community through the media and Gram Sabhas. If there are negative consequences [resulting from such trials] the companies/corporations must be held responsible and accountable for those consequences.
7. Farmer Field Days and Farmer Field Schools conducted on various crops must be held under the jurisdiction of all Gram Panchayats [Village Council] all over the state.
8. Information related to agricultural technology and research must be in simple local languages and must be accessible to farmers.
9. We feel that sufficient research on sugar cane which is an important crop in Karnataka. Therefore there is an urgent need to set up a research centre to research improvement of sugarcane and its cultivation.
10. Weather based crop insurance schemes must be abolished and every farm must be made a unit for the assessment of losses and the resultant compensation.
11. In order to make available soil and water testing facilities to farmers, Mobile Soil Testing Laboratories must be set up by the government.
12. There must be scientific system to predict reliable information on the possible rainfall or the absence of it, excess or deficient rainfall. This information must be accessible for farmers.
13. In partnership with the farming community, government must establish at every Hobli level cottage industries for processing of agricultural produce and value addition to them. Such cottage industries must be related to the local crop produce and must be funded by the government.
14. Seed Banks of local seed varieties must be established at the level of every Gram Panchayat [Village Council]. Seed distribution, seed festivals, Field trials and seed improvement programmes must be through them with government support.
15. We oppose anti farmer seed laws.
16. In view of the fact that farmers constitute 70% of the population of this country and that farming sector makes a very important contribution to the economic system of this country, the state and central governments must have a special Agricultural Budget
17. The pastures and tanks which were reserved for the grazing of cattle and sheep have disappeared. They must be renewed and made available to the community.
18. In order to educate the younger generation on agriculture and to help them develop interest in this sector, agriculture must be incorporated in the school syllabi.
19. Stop grabbling land from farmers in the name of development and Special Economic Zones.
20. Forest Department must stop free distribution of saplings such as Acacia and Eucalyptus to farmers. Instead of planting such species which harm the environment and result in the depletion of ground water levels as mono cultures, the Department must plant diverse species that protect land and water and are needed by animals, birds and human beings.

21. Small farmers, farm labour, artisanal communities such as carpenters and potters who produce farm related implements must be taken into partnership in the formulation of agricultural policies that are location specific.
22. Shepherds and pastoralists must be a part of the Karnataka Sheep Development Board and must play a role in the formulation of related policies.

Members of the Jury committee.

01. Ajjamma B. Illeppanavar
02. Chittappa
03. Dawal Saab.B
04. Eraiah Killedar
05. Gangamma
06. Hemavva Topappa Lamani
07. **Hombaiah**
08. **Hoyasala Appaji**
09. **J Gurulingaiah**
10. **Jayantanubi PeersabNadaph**
11. **Kallavva Malleshappa Haklad**
12. **Lalitha G Bhat**
13. **Laxmamma N. Doddaballapur**
14. **Laxmi Siddi**
15. **Laxmibai M. kamble**
16. **Maruthi Ningappa Hosmani**
17. **Maruthi T Kamble**
18. **Muniamma.**
19. **Rudrappa M.Zulapi**
20. **Sadashivaiah**
21. **Shantimoole**
22. **Shivaganagmma**
23. **Shivamma R**
24. **Gangamma**
25. **Laxmi Siddi**
26. **Shobvathi R. Tugave**
27. **Siddarajappa**
28. **Sri Chikkabore Gowda**
29. **Syamavva sayabanna,Inachakal**
30. **Talvar Ajjappa**

Source: www.raitateerpu.com/farmers_verdict.html

Annex VIII: List of people contacted

- Dr Dave Hoisington, the then Deputy Director General – Research (June 2008 to August 2013) who was also Global Theme Leader-Biotechnology (March 2005 to May 2008)
- Dr C L Laxmipathi Gowda, the then Director, Grain Legumes Research Programme, who is currently Deputy Director General – Research
- Mr Hanumanth Rao, Senior Manager, Intellectual Property (IP)
- Dr Hari D Upadhyay, Principal Scientist and Head Genebank
- Dr Kiran K Sharma, Principal Scientist and Director, Translational Platform for Transgenic Crops (PTTC) and CEO of the Agribusiness and Innovation Platform (AIP)
- Mr S. Aravazhi, Deputy Manager, Agri-Business Incubation (ABI) Programme
- Dr Michel Pimbert, ex-ICRISAT
- Mr P V Satheesh, Deccan Development Society, Andhra Pradesh, India
- Mr Mamadou Goita in Mali

Annex IX: Transformation dimensions: The old paradigm versus the new paradigm in agricultural research

	Transformation Dimensions	Old Paradigm	New Paradigm
1.	Orientation	• Agricultural research driven by NARES, CGIAR & global players/agents (mainstream) • Top down approach	• Activities driven by small holder producer communities (PC), season after season, adapting the agri systems of the area to climate change • Bottom up approach
2.	Governance Principles	• Centralisation • National, regional, global level outputs	• Decentralisation • Small producer family & community cluster level outputs
3.	Management Methods	• Capacity building of mainstream systems at the national, regional & global level • Investment decisions mostly driven by the needs of the external input organisations • Partnerships of organisations, institutions based on following NARES & CG mandates • Large & hierarchical organisations	• Capacity building of producer PC staffed by rural educated women, men and youth, trained as general practitioners (GPs) and MBAs in agriculture, to take over all responsibilities and manage risks, other than on farm activities and working with local institutions/ NGOs to replicate successful models in the area • 'Jury' of the small holder producer to decide on needs and priorities involving all stakeholders • Successful farmers contracted for wide replication of their models in their vicinity, assisted by institutions and other stakeholders • Funding of optimally sized PCs to facilitate community supported agriculture extension, finance, management and marketing
4.	Innovation Agriculture Research for Development (IAR4D)	• AR4D is reductionist • High specialisation: Breeding linked to externally bought inputs • Mainstream scientists governed by technological path dependency rather than IAR4D to meet the needs of smallholder producer communities • Knowledge systems largely based on laboratory and research station experiments • 'Scaling Up' based on statistical models	• IAR4D is smallholder friendly, holistic and follows the low cost integrated agriculture of the area, primarily to meet their nutritious food, health and cash needs – thus ensures access at little or no cost • Low cost integrated smallholder friendly IAR4D to be the focus and as applicable to each area • PC owned by producers but staffed by professionals, takes over all responsibilities and manages risks, to ensure a + 'cash to cash cycle' • Knowledge systems that are based on the local soil, agro climatic and successful farmer models • Primary/ Secondary value addition to optimize shelf life for storage till prices peak and for minimizing post harvest losses

5.	Indicators/ Measurement Units	• Focus on productivity - food security' at national, regional and global level • Production targets set at national/ global level • Serving the interests of national, Regional and International commodity markets • Economies of Scale for commoditisation • NPK in soil • Central tendencies • GDP, Income, Production, Productivity, etc.	• Nutritious food & health security of the smallholder producer communities and urban poor in the vicinity • Mitigation of hunger, malnutrition, poverty and suicides by ensuring access to nutritious food • Plans and budgets to meet needs of producer communities andl markets in the vicinity • 'Economies of Scope' or Diversity • Optimise carbon content in soil • PC services available to communities with focus on minimizing responsibilities and risks • Increase in 'purchasing power' and 'net income' of small holder farmers/producers/ rural communities

Source: Mehta, S., Rupela, O., Bisht S. and Nayak, A. 2010. Improving the Livelihoods of the Resource-poor Smallholder Farmers and Producers in Developing Countries: An Urgent Appeal for Action by GCARD. Submitted by: Group of Social Scientists and ARD Stakeholders. Available at www.fao.org/docs/eims/upload/.../White%20Paper%205Mar2k10.pdf.

ADARSA is part of an ongoing international initiative called *Democratising Food and Agricultural Research,* which was launched in 2007 by partners in South and West Asia, the Andean region of Latin America, West Africa, and Europe. This multi-regional initiative uses a decentralised and bottom-up process to enable small-scale farmers and other citizens to decide what type of agricultural research and development needs to be undertaken to ensure peoples' right to food; and both influence and transform agricultural research policies and practices for food sovereignty.