



# PLANTING INDIA IN AFRICA

Indian influence on African  
agricultural research  
and development

**ADARSA**

Alliance for Democratising  
Agricultural Research in South Asia



International Institute  
for Environment  
and Development

2014

Shalini Bhutani

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Alliance for Democratising Agricultural  
Research in South Asia (ADARSA)



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# List of abbreviations

AATF	African Agricultural Technology Foundation
ADARSA	Alliance for Democratising Agricultural Research in South Asia
AGRA	Alliance for Green Revolution in Africa
ARIPO	African Regional Industrial Property Organisation
AU	African Union
BIPA	Bilateral investment promotion and protection agreement
BISA	Borlaug Institute for South Asia
BRICS	Brazil, Russia, India, China and South Africa
CAR	Central African Republic
CGIAR	Consultative Group on International Agricultural Research
CII	Confederation of Indian Industry
CSO	Civil society organisation
EXIM	Export-Import Bank of India
FICCI	Federation of Indian Chambers of Commerce and Industry
FSS	Farm-saved seed
FTA	Free trade agreement
FTF	Feed the Future
G2G	Government-to-government
GE	genetically engineered
GoI	Government of India
IABC	India-Africa Business Council
IAFS	India-Africa Forum Summit
IARC	International agricultural research centre
IBSA	India, Brazil and South Africa
ICAR	Indian Council of Agricultural Research

ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IIED	International Institute for Environment & Development
IP	Intellectual property
IPRs	Intellectual property rights
IRRI	International Rice Research Institute
JAU	Junagadh Agricultural University
LOC	Line of credit
MEA	(India's) Ministry of External Affairs
MoU	Memorandum of Understanding
NARIs	National Agricultural Research Institutes
NEPAD	New Partnership for Africa's Development
NERICA	New Rice for Africa
P2P	people-to-people/peer-to-peer
PPP	public-private partnership
R&D	Research and development
RTI	Right to Information
SAU	State Agricultural University
USA	United States of America
USAID	United States Agency for International Development
WTO	World Trade Organisation

# Contents

Acknowledgements .....	ii
Abbreviations .....	iii
Introduction.....	1
Research approach .....	2
The growth of India-Africa relations .....	3
Governments connecting.....	5
Government of India's focus on Africa.....	5
African governments' interest in India.....	6
Indian trade and investment in Africa .....	7
The Export-Import Bank of India .....	7
Trade and investment for or against African farmers? .....	9
Indian businesses in Africa .....	11
Opportunities in African agriculture.....	12
Partners in agricultural research and development? .....	14
Unclear boundaries between private and public in agricultural research and development .....	14
India 'out there' .....	16
The influence of state agricultural universities .....	17
India-USA partnerships and their influence on African R&D.....	18
A green revolution in Africa.....	19
Feeding the future? .....	21
India, the US and the G8.....	21
The International Agricultural Research Centres in the mix.....	22
Focus on ICRISAT and IRRI .....	23
IARCs and the United States .....	25
Social and environmental implications .....	27
Seed .....	27
Agro-chemicals .....	29
'Land grabbing' .....	29
Conclusions .....	32
References .....	34

<b>Annexures</b> .....	<b>40</b>
Annex I: MoU between Acharya N G Ranga Agricultural University, India and Marekere University 2007 .....	40
Annex II: Sub-Grant Agreement between ICRISAT and Junagadh Agricultural University 2010 .....	45
Annex III: MoU between Junagadh Agricultural University and Venda University 2010 .....	50
Annex IV: MoU between the Indian Council of Agricultural Research, India and the Ethiopian Institute of Agricultural Research, Ethiopia 2011 .....	56
Annex V: MoU between Tamil Nadu Agricultural University and Embassy of Mali 2011 .....	60

# 1. Introduction

In the past five years, India's policies towards and its actions within Africa have seen both significant increase and qualitative change. This paper is an attempt to capture the emerging picture of India-Africa collaborations, and in particular how they relate to agricultural research and development (R&D). Its main objective is to better understand what the changes are, who is behind them, and especially what they mean for agricultural R&D in Africa. The author views these developments through the lens of the Alliance for Democratising Agricultural Research in South Asia (ADARSA; Box 1), and asks whether these changes support decentralised and bottom-up research. Do they enable small-scale farmers and other citizens (a) to decide what type of agricultural research needs to be done to ensure peoples' right to food; and (b) to influence and transform agricultural research policies and practices for food sovereignty?

The relationship between India and Africa has a long history. In recent times, this relationship has developed a new lexicon, and is also reaching out into newer geographies on the African continent. Previously, interactions across the Indian Ocean were along the lines of shared colonial legacies; India also supported liberation struggles in many African countries, although it did not then have a pan-African presence. Though Indian traders had trade links with Africa even prior to European colonial

rule in Africa, the relationship did not have the kind of defining influence on African rural landscapes that it has today.

Co-operation in agriculture and rural development has been an integral part of the relationship since India's independence. The first President of India, Dr Rajendra Prasad, inaugurated the First Afro-Asian Conference on Rural Reconstruction in New Delhi in 1961. ('Bandung' had already taken place in Bandung, Indonesia in 1955 – the first large-scale African-Asian conference, with delegates from 25 nations). In 1962, the Afro-Asian Rural Development Organisation (AARDO) was set up with headquarters in Delhi.<sup>1</sup>

Fifty years post-Bandung (2005), the New Asian-African Strategic Partnership (NAASP) was founded by Asian and African countries to promote co-operation between the two continents. It publicly acknowledges the importance of developing links between the two continents. The NAASP Declaration of 2005 also made express mention of enhanced co-operation in the area of agriculture.<sup>2</sup> In March 2012, amongst other things, the AARDO agreed on collaboration in research and extension for rural development, which has since been followed up with collaborative activities in agriculture, including being an institutional partner in the first ever Asia-Africa Agribusiness Forum in Delhi, India.<sup>3</sup> However,

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<sup>1</sup>See [www.aardo.org](http://www.aardo.org).

<sup>2</sup>The NAASP Declaration, 2005 stated that agriculture is amongst the areas on which the Partnership envisages promoting practical co-operation on both continents. Also, under 'Economic Co-operation' it is envisaged that there will be 'fostering of research and development and the sharing of relevant technologies, including nanotechnology, biotechnology and vaccine research'. The full text of the Declaration can be downloaded from <http://kemlu.go.id/Documents/NAASP/Hyperlink%201.pdf>

<sup>3</sup>The Asia-Africa Agribusiness Forum was co-organised by FICCI and the Government of India in February 2014. At the Forum, AARDO signed an MoU with FICCI for further collaboration. See [www.aaaf.in](http://www.aaaf.in).

things have moved rather slowly with the NAASP<sup>4</sup>

Nonetheless, in the contemporary partnership, agriculture remains one of the key areas of engagement. Moreover, many new actors other than governments are now playing a decisive role in scripting the current engagement. Collaboration on the India-Africa agricultural R&D story suggests that the terms of engagement are broadly being re-designed around three interconnected axes:

- the evolving Indo-African bilateral relationship
- the partnerships between India and the United States of America (USA)
- the Consultative Group on International Agricultural Research (CGIAR) centres.

The structure of the paper follows this pattern. After the introductory chapter, Chapter 2 focuses on how the India-Africa relations are growing, particularly through diverse interactions between governments on both sides and with Indian businesses and investments in Africa. Chapter 3 is then structured around the three axes of India-Africa, India-USA influence on Africa, and the role of the research centres of the CGIAR. The social and ecological

implications for smallholder farmers in Africa are the subject of Chapter 4.

Navigating through this landscape helps to better understand the changes that are taking place, where decisions on agricultural R&D systems are being taken, and by whom. It also gives a sense of how much space—or rather how little – there is for a ‘people’s’ vision of agriculture. As this paper reiterates, most of the India-Africa relationship-building is dominated by talks either at a government-to-government (G2G) or a business-to-business (B2B) level, at the expense of people-to-people (P2P) talks. This is typical of such processes in other parts of the world.

## Research approach

The research and the outline of this report were developed in consultation with ADARSA and with the kind assistance of Dr Michel Pimbert, previously with IIED and currently Director of the Centre for Agroecology and Food Security at Coventry University.

Initiated in 2007, ADARSA is now established in four regions, with one country acting as host for each region: West Africa (Mali), South Asia (India), West Asia (Iran) and the Andean region in Latin America (Bolivia/Peru). This paper was

### Box 1: 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 (CSO) 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 [www.raitateerpu.com/adarsa.html](http://www.raitateerpu.com/adarsa.html)).

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 people’s right to food; and (b) influence and transform agricultural research policies and practices for food sovereignty ([www.excludedvoices.org](http://www.excludedvoices.org)). This paper is one product of this initiative.

<sup>4</sup>The second NAASP Summit to be held in South Africa has been postponed till 2015; as explained by the South African government ‘it is the only existing African multilateral partnership that does not fall under the overall framework on multilateral cooperation with the African Union (AU)’. For more see: <http://www.dfa.gov.za/docs/2013pq/pq377.html>

envisioned as something that could be useful to both the African and South Asian partners.

Research for this paper began with gathering information, scanning the ever-increasing media reports and other documents on the India-Africa relationship over the period 2007 to 2013.<sup>5</sup> There was much sifting to do to get to the core of how this relationship influences decisions on agriculture and R&D in Africa. The author also undertook a brief literature review on the developing India-Africa relationship over the last five years.

To get a sense of the scope and scale of the collaborative research being undertaken, the author collected and examined texts of memoranda of understanding (MoUs) signed between national agricultural research institutes (NARIs) in India and African countries. As this information is not all openly available, the author filed Right to Information (RTI)

applications with the relevant public authorities in India, such as government departments and agriculture universities.

In January 2012 the author participated in the Afro-India Conclave at Hyderabad in Southern India, organised by the Deccan Development Society, which hosts the ADARSA Secretariat in India. She presented her findings on the growing number of agribusiness corporations from India expanding into African farmlands. The event was also an opportunity to talk to ADARSA India member Mr P V Satheesh, and to consult some of the African participants about their views on the India-Africa relationship.

Clearly, it has not been possible to cover each of Africa's 55 countries during this research. Instead the paper draws broad strokes, mentioning specific country experiences wherever possible in this phase of relationship building, particularly the last five years.

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<sup>5</sup>This period was chosen because ADARSA began in 2007; also by that time there was visible emphasis on (re)building the India-Africa relationship.

## 2. The growth of India-Africa relations

India-Africa collaborations on agricultural R&D need to be seen in the wider context of agricultural development. Agriculture has come to the forefront in Indo-African relations for several reasons:

- Geo-politics, i.e. India's public and private commercial interests. Africa is seen as an important support base for India's aspirations to be come a permanent member of the UN Security Council (Large, undated). For both sets of actors, being able to gain access to African markets and resources is important.
- The importance of agricultural trade in the multilateral trading system.<sup>6</sup> States interact through trade and investment, and the India-Africa partnership reflects the growing interest in trade in agricultural inputs and related products and services.
- The changes in the aid scenario. International donors and aid agencies are once more emphasising that agricultural transformation is essential for development.<sup>7</sup> As more than half of the population in India and Africa is rural-based (Table 1), agricultural policies are clearly crucial. Meanwhile, India itself has emerged as an important donor

Table 1. Rural population shares in the top ten poor countries in Africa and India, 2012

	Country	Rural population (% of total population)
1.	Congo, Dem Rep	65
2.	Burundi	89
3.	Eritrea	78
4.	Liberia	51
5.	Malawi	84
6.	Niger	82
7.	Madagascar	67
8.	Mozambique	69
9.	Togo	61
10.	Guinea	64
11.	India	68

Source: Compiled by author from World Bank data<sup>8</sup>

for Africa (*The Economist*, 2011). This report however does not go into the various aspects of development aid in Africa, particularly by India.

This chapter focuses on how the collaborations between India and various African countries are being developed, either through the government machinery on both sides or through Indian businesses, with and without political support.

<sup>6</sup>International trade rules are made under the World Trade Organisation (WTO), which among other things prescribes 'freer' trade and economic 'reforms' to open up almost all sectors of a country's economy. Nevertheless, small farmers' groups the world over have – since the inception of the WTO in 1995 – been asking that agriculture be outside the purview of the WTO. They are particularly concerned with the negative effects of the WTO's Agreement on Agriculture and the Agreement on Trade-Related aspects of Intellectual Property Rights. India and several African countries are members of the WTO; for the full list of 'Members and Observers' please refer to the WTO website at [www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/org6\\_e.htm](http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm)

<sup>7</sup>Most developmental aid in the 1980s and 90s was targeted at agriculture-related activities; its importance has not declined since. Since the global food crisis donors seem to be re-emphasising agriculture as an engine of economic growth in developing countries.

<sup>8</sup>World Bank data on <http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS> as accessed in March 2014

## Governments connecting

### *Government of India's focus on Africa*

The last few years have seen a marked government-to-government zeal for connecting. India has significantly stepped up both its economic and public diplomacy with Africa on two fronts. A dedicated Public Diplomacy Division was established in 2006 in India's Ministry of External Affairs (MEA) to foster greater understanding of India and its foreign policy concerns abroad, especially in Africa and other Asian countries. The MEA has also increased efforts to engage the Indian diaspora, particularly Indian entrepreneurs overseas, to participate in its African foray. Part of the Government of India's (GoI) aim is to boost agricultural exports to Indians abroad (Seshadri, 2009). India's Commerce Minister has set a target for India-Africa trade to grow to US\$ 200 billion by 2020.

India often builds on existing GoI programmes. For example, India's Ministry of Commerce launched its Focus Africa Programme in 2002 to widen and deepen India's trade with Africa.<sup>9</sup> Its initial focus was on seven countries in sub-Saharan Africa: Ethiopia, Ghana, Kenya, Mauritius, Nigeria, South Africa and Tanzania. The geographical scope was extended from April 2003 to include Angola, Botswana, Ivory Coast, Madagascar, Mozambique, Senegal, Seychelles, Uganda, Zambia, Namibia and Zimbabwe, along with the six countries of North Africa – Algeria, Egypt, Libya, Morocco, Sudan and Tunisia. It therefore now covers 24 countries in Africa. Its main aim is to help Indian companies in those countries; African trade delegations are also supported to visit India.

However, economic and commercial imperatives seem to have become more central than the mere political. This puts trade ministers, commerce bureaucrats and industry bigwigs in the driver's seat that was occupied earlier by foreign diplomats from MEA. While agriculture is very much part of the agenda, these other

ministries are at the forefront of the present India-Africa engagement; they typically see food and farming in the framework of industrial agriculture and agribusiness. In the words of India's Commerce Minister, Anand Sharma, 'Agriculture is one of the seven priority sectors of India's engagement with Africa' (quoted in Bhaskar, 2010).

India also engages individually with African countries through other configurations, such as the BASIC (Brazil, South Africa, India and China) and BRICS groupings (Brazil, Russia, India, China and South Africa). BRICS' partners view South Africa as a springboard into Africa and a key development partner on the continent, while South Africa sees its membership of the grouping as crucial for leveraging economic opportunities for the development of the country and of the continent as a whole (Khoza, 2013).<sup>10</sup> India also relates to South Africa as part of the trilateral grouping IBSA (India, Brazil and South Africa) launched in 2003. The IBSA Dialogue Forum focuses on co-operation in sectoral areas such as agriculture, with agriculture ministers and senior officials also interacting on issues of mutual interest that could be synergised. One such area that has been identified for future work is joint agricultural R&D (IBSA, undated). A trilateral memorandum of understanding on 'Agriculture and Allied Fields' was signed in 2006 (IBSA, 2006).

The Indian Institute of Foreign Trade (IIFT) – a government think-tank – was asked by India's Ministry of Agriculture in 2011 to study the issue of agricultural outsourcing and the possible opportunities for India. IIFT recommended, *inter alia*, that 'India should enter into bilateral framework agreements with countries which are willing to facilitate Indian investments... co-ordinate interventions of the Government of India under the India-Africa Framework for Cooperation and private investments by Indian entities in Africa to maximise the impact. A supportive policy will encourage Indian entrepreneurs to obtain the desired results.'<sup>11</sup>

<sup>9</sup>See the Focus Africa Programme web site hosted by the Department of Commerce, GoI <http://focusafrica.gov.in/index.html>

<sup>10</sup>South Africa: Food Security High on BRICS Agenda <http://allafrica.com/stories/201303201049.html>

<sup>11</sup>As reported in Sanjeev Chopra's blog; see [www.sanjeevchopra.in/articles/policy-options-on-agricultural-outsourcing](http://www.sanjeevchopra.in/articles/policy-options-on-agricultural-outsourcing)

This is indeed what the government of India has done so far. In essence, it has cleared the path for 'India Inc.' to chart its course in Africa.

To complement the government-to-government and business-to-business initiatives, GoI has stepped up its people-to-people outreach to African countries through INDIAFRICA. This initiative, carried out through a private company since 2011, aims to bring the people of India and Africa closer and help shape the future of these two geographies by engaging their youth.<sup>12</sup>

The GoI has clearly taken considered steps to increase its reach across the African continent. In 2004, through a G2G initiative to transfer agricultural technology to these African countries – known as Techno-Economic Approach for Africa-India Movement (or TEAM) – the GoI attempted special co-operation with West Africa, which previously had a low profile in India. Eight West African countries – Burkina Faso, Chad, Côte d'Ivoire, Equatorial Guinea, Ghana, Guinea Bissau, Mali, Senegal, and India – comprise TEAM-9. The first ministerial meeting of TEAM-9 countries was held in the Indian capital, New Delhi, in 2004 (Financial Express, 2004). For example the initiative has seen India become a key partner in the mechanisation of agriculture in Burkina Faso (DajiWorld.com, 2013). In 2013 a government minister from Burkina Faso had this to say about the relationship: 'India is known in Africa also for having developed low-cost, appropriate technology. Many Burkinabe business people are coming to India to learn from India's expertise and set up agriculture processing plants, for instance. This is the contribution of India'. (*op. cit.*). India's growing engagement with a predominantly Francophone part of Africa is reflected by the fact that most of the 15 member countries of the Economic Community of West African States (ECOWAS) have established embassies in New Delhi.

High-level Indo-African government summits are now routine, often held jointly with business leaders and industry associations. In 2008 the

first India-Africa Forum Summit was held in New Delhi, India. The summit has become a regular fixture, with the second held in 2011 and the third scheduled for 2014. This official platform for developing relations is seen by both sides as marking a new era of co-operation. The first summit had broad political support and was attended by 14 African leaders selected by the African Union (AU) Commission. As noted by the Indian Prime Minister Mr Manmohan Singh, 'the time has come to create a new architecture for our engagement in the 21st century.'<sup>10</sup> During the second summit, he announced an Africa-India food-processing cluster to add value to agricultural products; the creation of a regional and export market; and an India-Africa institute of agriculture and rural development (NEPAD, 2011). The two continents have also adopted a Plan of Action for the Enhanced Framework for Cooperation ahead of the summit scheduled for next year (SME Times, 2013).

#### *African governments' interest in India*

While this report focuses mainly on the Indian impetus, many African governments seem to be equally keen to partner with GoI on the agricultural front. The commitment of several African countries to develop their agricultural sector is creating an appetite for Indian agricultural products and services. For instance, in 2005 the Ethiopian government mooted a national development strategy known as Agricultural Development-Led Industrialisation (ADLI). The strategy encourages the use of fertilisers and 'improved' seeds, through which the government aims to transform Ethiopia's agrarian economy to a modern economy. Likewise, the Nigerian government, equally keen to both modernise and mechanise agriculture, has been importing agricultural equipment and machinery, including tractors, from India. This creates a portfolio of overlapping interests, with agricultural development on one side and agribusinesses on the other.

African governments have actively sought foreign investors, vying with each other to

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<sup>12</sup>For more, see [www.indiafrica.in](http://www.indiafrica.in).

woo Indian industry and investment, including in agriculture (Outlook, 2012). For example, Burkina Faso allows 100 per cent foreign investment with easy repatriation of profits, and new companies benefit from a tax holiday for the first few years, depending on the sector.<sup>13</sup> This furthers opportunities for India's private sector to engage in Africa's agriculture sector.

There is equal policy support from either side for agricultural co-operation; this is an area of mutual interest. Science and technology are also an integral part of the policy (*Business Standard*, 2013a). The fact that India and many African countries are at different levels of agricultural development partly explains the natural partnering. While India has had the experience of the 'Green Revolution' and is poised for a 'Gene Revolution', Africa looks to India for support to revolutionise its agriculture (Juma, 2011). Infrastructure and capacity building are two key areas on that front. This viewpoint is not only shared by African governments, but also by other countries, including those who support the New Partnership for Africa's Development (NEPAD), an AU strategic framework for pan-African socio-economic development. Agriculture and food security are key thematic areas for NEPAD,<sup>14</sup> and are taken forward through the Comprehensive Africa Agriculture Development Program (CAADP, undated; Box 2). The CAADP is supported by the governments of the USA (through USAID), the Netherlands, France, the European Commission, Ireland (IrishAid) and the UK (Department for International Development). Financial support from these six contributors is pooled into a multi-donor trust fund set up in 2008 and hosted by the World Bank.

## Indian trade and investment in Africa

### *The Export-Import Bank of India*

A number of Indian financial institutions and business associations have paved India's entry

### Box 2: Same goals, similar research?

"Africa and India reaffirm their commitment to cooperate for increasing agricultural output and achieving the Millennium Development Goal of halving the proportion of people who suffer from hunger and malnutrition by 2015. They emphasise the importance of harnessing the latest scientific research for raising productivity and for the conservation of land and the environment in order to ensure food security for their people and to bring down the currently rising cost of food prices so as to make food affordable for all. In this respect, they agree to collaborate in the implementation of the Comprehensive Africa Agricultural Development Programme (CAADP)."

Paragraph 1(i) of the Africa-India Framework for Enhanced Co-operation, 2nd Africa-India Forum Summit 2011, Addis Ababa, Ethiopia.

into parts of Africa where its links were previously limited – such as in North and West Africa – and helped its expansion where it already had a presence. These include the Confederation of Indian Industry (CII), and notably the Export-Import Bank of India (EXIM Bank; Box 3). EXIM Bank is India's premier export financial institution, wholly owned by the GoI. The Bank made a post-tax profit of INR 7,423 million (approx. US\$ 122.5 million) in the financial year 2012-13.<sup>15</sup> Its Board of Directors include government representatives, public sector banks and the business community. The Bank has played a crucial role in furthering India's economic interests in Africa, identifying 15 African countries as good investment destinations for Indian companies, including Egypt, Kenya, South Africa and Nigeria.<sup>16</sup> It has also strengthened institutional linkages with the African Development Bank to create an enabling environment for trade and investment.

The bank also gives concessional lines of credit (LOCs) to various African governments, banks and financial institutions. Often such LOCs are for national development projects, and where these projects involve agricultural development, Indian foreign investors stand to gain concessions and contracts for agricultural

<sup>13</sup>See details on the Burkinafasoindia web site: <http://www.burkinafasoindia.org/details/224/advantages-offered-by-the-government-in-connection-with-investment.html>

<sup>14</sup>See NEPAD's web site at [www.nepad.org/foodsecurity](http://www.nepad.org/foodsecurity)

<sup>15</sup>See the EXIM Bank's performance highlights at [www.eximbankindia.in/?q=performance-highlights](http://www.eximbankindia.in/?q=performance-highlights)

<sup>16</sup>See <http://economictimes.indiatimes.com/topic/Africa>

### Box 3: Collaboration between the CII and EXIM Bank in Africa

Together the CII and the EXIM Bank organise a high-level India-Africa business conclave, which, like the India-Africa Forum Summit, has become an annual feature since 2005. The 8th CII-EXIM Bank Conclave on “India Africa Project Partnership” was held in March 2012. It clearly identified agricultural research and development, water conservation, irrigation and building capacity of African banks, financial institutions and the business sectors as key areas on which India and Africa could partner to take forward their agenda on food security. In March 2013 the 9th CII-EXIM Bank Conclave, one of the biggest ever events of its kind, was attended by more than 900 people. The participants included heads of state and government, over 80 ministers, nine state governors, 39 members of parliament, 876 business executives, as well as journalists and high-ranking officials from Africa (India-Africa Connect, undated).

development in the form of foreign direct investment. It provides a safe, non-recourse<sup>17</sup> financing option for Indian exporters. For the African borrowers, the LOCs provide soft loans that attract a differentiated rate of interest and varying pay-back periods depending on a country's income category.

As part of its foreign trade policy (2009-2014), the GoI introduced a ‘pilot scheme’ involving a two per cent interest subsidy for projects set up through EXIM Bank for countries in Africa, as well as Myanmar and the South Asian Association for Regional Cooperation region.<sup>18</sup> This scheme became operational in 2012, starting with a combined worth of US\$ 500 million. The bank also made a multilateral financial co-operation agreement with development banks in Brazil, Russia, China and South Africa during the BRICS Summit 2013 in Durban, South Africa (the BRICS Multilateral Infrastructure Co-financing for Africa) (EXIM Bank Annual Report 2012-13).

The largest amount in LOC approved by the EXIM Bank so far has gone to Ethiopia (totalling US\$ 639.5 million) for developing three sugar companies in the Horn of Africa, alongside enhancing ethanol production capacities. The

Ethiopian Government has since been facilitating Indian investors to bring its land under sugarcane production; this also creates demand for other Indian equipment such as sugarcane crushing plants and sugar processing units. The GoI justifies this assistance programme in Africa as being responsive to African needs, since the government of Ethiopia asked for support to establish their sugar industry (GoI Monitor, 2011).

Other African countries benefitting from similar LOCs for the agricultural sector development include:<sup>19</sup>

- **Cameroon** – maize, rice and cassava plantation projects
- **Chad** – cotton yarn plant; plant to assemble agricultural equipment
- **Côte d’Ivoire** – agricultural projects for vegetable oil extraction, fruits and vegetable chips production and production of cocoa, coffee, etc.; biotechnology park; fisheries processing plant and coconut fibre processing plant; and a rice production programme
- **Eritrea** – multipurpose agricultural projects
- **Ghana** – rural electrification, agriculture, communication and transportation projects; sugar plant project; agro processing plants including fish processing and harvesting project
- **Lesotho** – Export of tractors, pump sets, consultancy services and irrigation equipment
- **Madagascar** – project for rice productivity and fertiliser production project
- **Malawi** – cotton processing; development of irrigation network and a threshing plant
- **Sierra Leone** – procurement of tractors, harvesters, implements, rice threshers, rice mills, maize shellers; and a pesticides project
- **Tanzania** – Export of tractors, pumps and equipment from India to Tanzania.

<sup>17</sup>A non-recourse loan is secured by collateral, usually property. If the borrower defaults on payments, they may lose the collateral, but are not personally liable for the loan and are not therefore obliged to make further repayments.

<sup>18</sup>Ministry of Commerce & Industry, GoI Annual Report 2012-13 [http://commerce.nic.in/publications/annualreport\\_chapter4-2012-13.asp](http://commerce.nic.in/publications/annualreport_chapter4-2012-13.asp)

<sup>19</sup>Compiled from EXIM's full list of operative LOCs as of 18 March 2014, [www.eximbankindia.in/sites/all/themes/exim/files/OperativeLOC.pdf](http://www.eximbankindia.in/sites/all/themes/exim/files/OperativeLOC.pdf)

### *Trade and investment for or against African farmers?*

Africa has become the new frontier for investment. Debt relief by the Group of 8 (or G8, the world's eight largest economies) to several African countries may also mean that these countries have more capital to spend on 'development' issues, and many are keen to develop their agricultural sector. The question is: now that agriculture has become a political priority, is there an opportunity to push anything other than a liberalised agricultural sector?

Bodies like EXIM Bank have a significant influence on the choice of farming methods and equipment available to individual African farmers. LOCs to 'enhance' the agriculture sector in Africa affect their options, including what they may want to grow. By changing the types and availability of both agricultural inputs (seed, fertiliser, pesticides, agricultural knowledge and education, and the availability of power) and agricultural processing options, these investments could influence the focus of agricultural R&D in the respective countries. For instance, given the emphasis on developing the sugar industry in Ethiopia, collaborations between the Indian Institute of Sugarcane Research and the Ethiopian NARIs are also under consideration. Another ICAR body – the Sugarcane Breeding Institute in India – has developed transgenic sugarcane to meet the needs of both the sugar and ethanol industry. When ready for commercialisation, this variety may find its way to African fields. Such sourcing of R&D outputs from India is not without precedent; in the 1930s and 40s sugarcane crosses were imported to South Africa from India's Sugarcane Breeding Institute (Zhou, 2012). They became the basis for the two of the most widely grown cultivars of sugarcane in South Africa.<sup>20</sup>

Nonetheless, what is being sown and grown in Africa is of interest to India as well. India is the largest consumer of sugar in the world and

therefore GoI will look to the expanding sugar industry in African countries to meet its own domestic needs. Local African farmers could simply become a part of that global supply chain, rather than being allowed to make independent choices about the crops to sow to meet local needs. This also makes them more vulnerable to the dollar-dominated commodity prices in the global market. A dip in global prices that tumbles margins can quickly put sugar millers out of business.

Yet African governments are keen to cash in on the lower costs of sugar production in their continent compared to other sugar-producing regions such as Brazil, India and the European Union. The MoU signed between ICAR and the Ethiopian Institute of Agricultural Research (EIAR) in 2011 (Box 6) makes specific mention of the intent to create linkages between the Ethiopian Sugar Corporation and the Indian Sugar Research/Counterpart Institution for R&D of sugarcane and sugar beet production (see Article 10 in Annex IV). While the global sugar industry becomes more consolidated, agricultural R&D linkages are also being made across borders which support that model of industrial agriculture.

Irrespective of the crop or commodity, integrating smallholders into the market, local or global, is the mainstream approach to improving the lives and livelihoods of the small producers in both India and Africa. In India, the GoI's economic liberalisation programme launched in 1991 oriented agriculture and other sectors towards the global market. India joined the World Trade Organisation (WTO) in 1995. The ensuing liberalisation and globalisation can lead to significant impacts on local farmers. African smallholders too are not unfamiliar with the consequences of this; liberalising imports can put their products in an unfavourable position vis-a-vis cheap(er) imports, while barriers to market access in 'developed' country markets give only limited export opportunities in return.

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<sup>20</sup>The sugarcane varieties NCo310 and NCo376 were selected and bred by the South African Sugarcane Research Institute (SASRI) from crosses imported from India. The irony is that SASRI itself was established, in 1925 in Durban South Africa, to develop sugarcane varieties after imported genotypes that were not adapted to local growing conditions succumbed to pests and diseases.

Since the WTO rules have come to be implemented, small farmers in developing countries – both in Asia and Africa – have been feeling the pressure of neoliberal agricultural policies and export-oriented production. Yet despite the problems with the multilateral trade rules, the last five to ten years have seen an upward trend in bilateral agreements, which may either be focused on increasing free trade or liberalising the investment environment.

India has also negotiated and signed free trade agreements (FTAs) and bilateral investment promotion and protection agreements (BIPAs) with several countries, including those in Africa (Table 2). BIPAs are agreements between two states to promote and protect the interests of investors in both countries. BIPAs are a tool to liberalise, i.e. relax, government restrictions in areas of the economy, such as agriculture, thereby allowing entry by the large private sector and foreign investors. Mr Chandrajit Banerjee, Director General of CII, points out that in the last decade ‘both India and Africa signed 24 major bilateral treaties and we have already become the fourth largest trading partner with Africa’ (quoted in Business Standard, 2013b).

There is a set of older generation trade agreements through which agricultural products and inputs have been traded; these are less aggressive than the current FTAs.<sup>21</sup> For instance, under a trade agreement with Angola signed in 1986, exports from India include food (such as wheat and rice), pesticides, and large industry projects such as fertiliser manufacturing. Under a more recent agreement, India exports rice and flour milling machinery, sugar milling machinery and agricultural implements to Senegal. Most of today’s FTAs impose higher intellectual property (IP) standards than does the WTO. This in turn can have a direct impact on agricultural R&D if, for instance, research exemptions are not allowed for IP-protected proprietary planting material. Likewise, bilateral investment treaties

that give primacy to (foreign) investor rights can compel host governments to prioritise the access of these investors to land, water, etc. at the expense of local farming, pastoral or fishing communities.

**Table 2. India's BIPAs with African countries**

	<b>Country</b>	<b>Year signed</b>
1.	Egypt	1997
2.	Mauritius	1998
3.	Morocco	1999
4.	Zimbabwe	1999
5.	Ghana	2002
6.	Sudan	2003
7.	Djibouti	2003
8.	Libya	2007
9.	Ethiopia	2007
10.	Senegal	2008
11.	Mozambique	2009
12.	DRC	2010
13.	Seychelles	2010

South-South trade does, however, offer some comfort in this changed global scenario. Confronted with the agricultural subsidies of the 'developed' countries, which price out African and Indian farm products, the two partners are exploring what each side can provide to the other in terms of market destinations. For example, South Africa is targeting China and India for its citrus exports following the European Union’s threat of an import ban (van Vuuren and Mokhema, 2013). Likewise, the GoI has in the last decade been looking to Africa to meet its export targets. To that end the GoI would like Africa’s Regional Economic Communities (RECs) to commit themselves to economic integration, leading to the creation of a common market.<sup>22</sup> These issues are debated at the Africa-India Trade Ministers Dialogue, which has become an annual event since its first

<sup>22</sup>For a full list of India-Africa Trade Agreements see the Department of Commerce, GoI website [http://commerce.nic.in/trade/international\\_ta\\_indaf.asp/](http://commerce.nic.in/trade/international_ta_indaf.asp/)

<sup>23</sup>Currently, there are eight RECs recognised by the African Union, each established under a separate regional treaty. They are the Arab Maghreb Union (UMA), Common Market for Eastern and Southern Africa (COMESA), Community of Sahel-Saharan States (CEN-SAD), East African Community (EAC), Economic Community of Central African States (ECCAS), Economic Community of West African States (ECOWAS), Intergovernmental Authority on Development (IGAD) and the Southern African Development Community (SADC).

meeting in Addis Ababa, Ethiopia in May 2011. As per the joint statement of the third Africa-India Trade Ministers held in Johannesburg, South Africa on 1 October 2013, an India-COMESA Joint Working Group has been set up to examine the feasibility of an FTA between India and COMESA. If such trade/investment agreements are designed and negotiated in the same vein as their Northern trading partners, there will be little in them for small farmers on both sides.

### Indian businesses in Africa

The growing Indian presence in Africa is essentially private sector-driven (in contrast to China's, which is more state-driven). India's 'governmental footprint' in Africa comes and goes along with the private sector. Not only have these businesses risen rapidly on the global scene, but several multinational corporations (MNCs) have a base in India. This large corporate sector, aided by the GoI, sees a potential market in African agriculture and allied sectors.

India's own industry associations – such as the CII – see Africa as a new focus market along with Latin American countries, and have set up their own Africa desks. The CII's role, among others, is to adopt 'a proactive and partnership approach with the government on various national and international issues concerning the Indian economy'.<sup>23</sup> It frequently organises sessions for its members on 'Doing business with African countries', providing a forum for businesses, diplomats and decision makers to interact (TwoCircles.Net, 2012). The CII obviously advocates its view of corporate-driven agriculture (Box 4).

The Chair of Kirloskar Brothers Limited (KBL), an engineering giant, Mr Sanjay Kirloskar has also been the Chair of CII's Africa Committee. Doing business in Africa is not simply about selling in existing markets, but the international expansion of the business

#### Box 4: The Confederation of Indian Industry and the World Trade Organisation's joint recommendation on agriculture

According to the CII-WTO 2013 joint report, 'greater co-operation in agriculture and agro-processing would have a significant bearing on the food security situation in both Africa and India. Africa's farm sector is expected to grow to the tune of US\$1 trillion by 2030, although this growth will largely depend on the infusion of adequate technology. Indian companies could help Africa's agriculture sector in farm mechanisation; agro-processing and storage; investments in training and development of human resources for the farm sector; greenfield investments; local vendor development; establishing agro parks, horticulture industries and floriculture units, among others. In boosting Africa's agricultural value addition, India too can meet its own food needs through imports – especially in pulses where India faces a major shortfall'.

Source: CII/WTO, 2013

itself. KBL has acquired 90 per cent of shares in Braybar Pumps (Pty.), South Africa, to become an 'end-to-end solution provider in the global pumping industry' (*The Economic Times*, 2010). These pumps are used not only for irrigation purposes, but also in the expanding mining industry in Africa, which has implications for farmland.

The Federation of Indian Chambers of Commerce and Industry (FICCI) also has an Africa Desk.<sup>24</sup> FICCI organises trade delegations and business events to and from Africa. For instance, it co-organised a delegation with the South African Deputy Minister of Trade and Industry (comprising approximately 48 South African companies) to the 4th annual Investment and Trade Initiative (ITI) in India in March 2013.<sup>25</sup> This event brought together companies from various sectors, including agro-processing. Similarly, in April 2013 FICCI organised a multi-sectoral Indian business delegation to Liberia and Burkina Faso. The focus sectors included agriculture and allied activities.

FICCI is also the institutional partner of the Indian Government's Department of Industrial Policy and Promotion in a pan-African initiative

<sup>23</sup>For more on the CII's roles see its web page: [www.cii.in/AboutUs\\_Roles.aspx?enc=ns9fjzmNKJnsoQCyKqUmaQ==](http://www.cii.in/AboutUs_Roles.aspx?enc=ns9fjzmNKJnsoQCyKqUmaQ==)

<sup>24</sup>FICCI's Africa Desk web page: <http://ficci.com/global-africa.asp>

<sup>25</sup>See the overview on the FICCI website, [www.ficci.com/events-page.asp?evid=21355](http://www.ficci.com/events-page.asp?evid=21355)

– the India-Africa Business Council (IABC). Announced during the India-Africa Forum Summit II, this council is a mechanism to strengthen and deepen economic ties among the business communities of India and Africa. It held its inaugural meeting on 17 March, 2012 in New Delhi. The Indian Prime Minister had appointed Mr Sunil Bharti Mittal, chairman and group CEO, Bharti Enterprises, to be the co-chair for the Indian side.<sup>26</sup> Bharti Enterprises is already present in Africa through its telecom firm Bharti Airtel Limited, India’s largest telecom service provider. The firm also has plans for agriculture in Africa (Farmlandgrab.org, 2010). Firms like Bharti, Tata and Mahindra (Box 5) are among the top 100 Indian companies, giving them a degree of clout in GoI’s strategising for Africa (Table 3).

**Table 3. Which of India’s top 100 companies have a presence in Africa?**

Company	Net sales in financial year ending March 2013 (Crore rupees)
Bharti Airtel	45,350.90
Tata Motors	44,765.72
Mahindra & Mahindra	40,441.16

Note: 1 crore=10 million; 1 Indian rupee=approx. US\$0.62 at time of writing  
Source: Company Annual Reports 2012-2013

### *Opportunities in African agriculture*

Seed companies and companies that are diversifying into agriculture find an easy market in Africa, and the large scale of operations can prove to be a boon for business. Other opportunities for agro-tech companies include tractors (see Box 5) and livestock and poultry, an area being explored by the Andhra Pradesh chapter of the CII. The CII in general, through its biennial agro technology and business fair, creates a meeting ground for commercial interests on both sides.<sup>27</sup> Indian companies might in fact find it easier to operate in African

countries than in their own countries, because of the business-friendly environment being offered to them.

Big business also offers a ready-made institutional model for African governments to pursue. Governments merely have to plug into the global supply chain into which Africa is slowly being absorbed. For example, another Indian business – Nava Bharat Ventures Limited, which invests in sugar and oil palm plantations – is working on a backward integration<sup>28</sup> commercial agriculture project in collaboration with the National Development Council of Tanzania. There are other Indian businesses, such as Manasa Group in Ghana, which seek opportunities beyond farming and are involved in developing integrated models in which production, inventory and distribution are integrated within the manufacturing process (The Hindu Business Line, 2013).

One assessment found that, except for South Africa and Mauritius, private sector participation in agricultural research in most parts of Africa is still insignificant, essentially because agriculture is not yet sufficiently market-driven (FARA, 2006). Indian businesses may change that. The lack of infrastructure and market access is precisely what the India-Africa drivers of change want to 'correct' in order to expand their businesses. The World Economic Forum also places a lot of emphasis on Africa, with the 23rd World Economic Forum on Africa (“Delivering on Africa’s Promise”) bringing together regional and global leaders from business, government and civil society ‘to deepen the continent’s integration agenda and renew commitment to a sustainable path of growth and development’.<sup>29</sup> The interest of ‘India Inc.’ must also be seen in the context of global businesses’ larger interest in Africa. In fact, global business is very much one of the drivers of change in agriculture the world over (Hazell & Wood, 2008).

<sup>27</sup>See details of the forthcoming Agro Tech 2014 at [www.agrotech-india.com/cii](http://www.agrotech-india.com/cii).

<sup>28</sup>When a company consuming raw materials acquires its suppliers or sets up its own supply facilities.

<sup>29</sup>For more see [www.weforum.org/events/world-economic-forum-africa](http://www.weforum.org/events/world-economic-forum-africa)

### Box 5: Of tractors and transformation

Tractors have become something of an Indian motif in African fields, and of the mechanisation of agriculture. Tractors also have political symbolism, of the kind of agriculture that a country's leaders (as well as some, if not all, farmers) want to encourage. They top the list of agricultural equipment being offered for sale in Africa by Indian businesses. One of the world's largest tractor manufacturers, Mahindra & Mahindra of India, plans to set up assembly plants in Tunisia, Morocco, South Africa, Kenya, Ethiopia and Zambia. Through Mahindra Samridhi Centres, the company markets its products to farmers in India, and it will be using the same model for the dissemination of its technologies in Africa as well.

International Tractors (ITL), an arm of the Indian Sonalika Group, is planning to set up two assembly facilities for tractors in south and east Africa, with the intention of doubling its turnover from exports to INR 800 crore (8,000 million) by 2014 (Business Standard, 2011). In 2010 it supplied 1,000 tractors to the Government of Cameroon – the first ever company to execute such a large order under the Government of India's line of credit to any African country.<sup>30</sup> It is also engaged in training local African farmers to use tractors and implements supplied by the company (for example, in an ongoing maize project in part financed by India in Cameroon).

India-based Escorts Group, a leading agri-machinery business, has sold more than 800 tractors in Tanzania in less than three years. This follows the roll out of the Tanzanian government-led 'Kilimo Kwanza' (Agriculture First) initiative in 2009 to modernise and commercialise agriculture in the country (African Farming and Food Processing, 2013). The plan was formulated under the patronage of the Tanzania National Business Council. However, in the second phase of the tractor project the GoI declined a loan request by the Tanzanian government to acquire 3,000 more tractors, as it had reportedly already spent a large amount of money on the Tanzanian water sector.

Benin will become 'self-sufficient in tractors' and could even export them to the West African region once a US\$15 million Indian-aided plant to produce 2,500 machines a year begins production. The Vice President of Ghana, John Dramani Mahama, had also sought the supply of tractors from both India and Brazil between 2010 and 2013 via the Savannah Accelerated Development Authority (SADA), for distribution to farmers in the SADA areas in North Ghana. SADA has come under severe criticism for various reasons, including not being a 'nationally thought-out programme' (GhanaWeb, 2014).<sup>31</sup>

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<sup>30</sup>See [www.sonalika.com/pages/media.asp#news6](http://www.sonalika.com/pages/media.asp#news6)

<sup>31</sup>For a list of international agencies and foreign governments involved in helping SADA to accelerate agricultural modernisation in Ghana, see the Republic of Ghana's Ministry of Food and Agriculture's site: [mofa.gov.gh/site/?page\\_id=3575](http://mofa.gov.gh/site/?page_id=3575)

# Partners in agricultural research

## 3. and development?

In this chapter we look more closely at each of the three axes of collaboration in Indo-African agricultural R&D. First, we will see how India and Africa collaborate bilaterally, and what influences this relationship. Second, we examine how India-USA partnerships affect African R&D in this area. Finally we look at the role of the international agricultural research centres in the equation.

### Unclear boundaries between private and public in agricultural research and development

Currently, as in Asia, most agricultural R&D in Africa still happens in the public sector. But as is the trend in other parts of the world, partnerships with the corporate sector are slowly being made the norm. The national agricultural research institutes (NARIs) are also of varying strengths and at different stages of partnership with both farmers and the corporate sector. In fact, in some African countries, both the NARIs and the private sector are relatively weak. Some believe that private companies are not yet effectively integrated into the national agricultural research system in Africa.

The NARIs in Africa are grouped into four sub-regional organisations (SROs) to co-ordinate actions. For instance, the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) comprises the NARIs of 11 member countries: Burundi, DRC, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, South Sudan, Sudan, Tanzania and

Uganda. The SROs have also formed the Forum for Agricultural Research in Africa (FARA) as an apex body to provide a continent-wide perspective on agricultural research for development. There are ongoing discussions about how to make FARA and the SROs more inclusive fora for R&D, involving CSOs, the private sector and agricultural advisory services. One recommendation goes so far as to suggest a partial or complete privatisation of agricultural research, phased over a five-year period, to minimise the strong dependence of the NARIs on unreliable government and donor funding (FARA, 2006). FARA's Strategic Plan (2007-2016) clearly envisages co-operation with the Indian agricultural research system (FARA, 2007). There are also institutional linkages between the SROs and the Indian NARIs through the Indian Council of Agricultural Research (ICAR, Box 6).

In India, the large private sector has already become a decisive force in agricultural R&D, while the Indian NARIs are in dire need of institutional reform (Bhutani, 2013). There has been an increasing tendency for agricultural research to become centralised. Some state governments in India have come under public pressure after becoming passive recipients of agricultural technologies, such as genetically engineered crops,<sup>32</sup> pushed by central government and ICAR decisions. The highly centralised Indian template for agricultural R&D may well end up being exported to its African partners. This clearly has implications for the

<sup>32</sup>Public protests in India led to several state governments passing orders to disallow the field testing of GE crops and the commercial application of the first GE food crop brinjal in India.

## Box 6: CAR's African ambitions

The Indian Council of Agricultural Research (ICAR), India's lead national organisation for agricultural research and education, is keen to take on a global face. The Working Group on Agricultural Research and Education of the Planning Commission of India (2012) recommends that:

'[India] should align all its activities and resources to become a truly global thought leader in cutting-edge agricultural research and innovations. ICAR should also envision a much greater role for itself in international agricultural research. It should in particular strengthen linkages with the NARS in Africa and Asia through appropriate mechanism, besides continuing partnership with the CGIAR system.' (Gol, 2011)

ICAR already engages with African NARIs. It is a matter of concern, though, that the details of the joint research are not always known to the general public, including the farmers who will be the end recipients (see Annex IV). For example, an MoU was signed between ICAR and the Ethiopian Institute of Agricultural Research (EIAR) for 'agricultural research and education' in December 2011. This MoU has several priority areas of co-operation, ranging from crop science to fisheries and agricultural research in horticulture. It is valid for five years with an automatic renewal for five successive years. Such arrangements can obstruct the 'democratising' of agricultural R&D if they exclude small farmers on both sides from the process of framing these MoUs, and deciding research priorities. Since involving farmers in research priority setting is not in the organisational culture of either NARI, local voices are likely to be excluded from decision making and governance. True that in some African countries the political situation itself may not give a voice to farmers and CSOs in general, but chest-thumping about democracy is meaningless if in its interactions overseas India does not help to institutionalise democratic principles even in research governance.

protection and creation of non-centralised local control and the participation of farmers (Pal, 2008).

India's emphasis in this area has implications for how African agricultural R&D is shaped. This could determine who governs research – the public sector, private players or small farmers? When agricultural policies change direction under external influences, NARIs often follow, changing their focus from smallholder farming to the new demands of more influential players such as big businesses. For example, cultivating 'energy crops' can compete for space with food production. This has serious implications for the food sovereignty of local communities. Yet, R&D support to Indian companies in Africa growing biofuels (Table 4) comes from the NARIs. One Indian company, Emami Biotech Limited, cultivates jatropha (a plant used for biofuel) in Ethiopia. It has not only established an in-house R&D facility, but has also collaborated with Tamil Nadu Agriculture University and other research institutions for technical assistance.<sup>33</sup> Other Indian biofuel companies operating in Africa have their own R&D facilities – such as Abellon CleanEnergy based in Gujarat, Western India.<sup>34</sup> This state-of-the-art facility is recognised by the Indian government's Department of Scientific

and Industrial Research at the Ministry of Science and Technology. Drawing away scarce resources from partially publicly funded R&D facilities such as state universities or NARIs reduces the scale and scope of research targeting smallholder family farming. Public research – if resourced correctly to service smallholders and address their needs – can be a powerful tool for meaningful development on the other hand.

Table 4. Indian companies producing biofuels in African countries

Country	Company	Crop	Hectares
Cameroon	Siva Group	Oil palm	200,000
Ethiopia	BHO Bio Products	Cereals	27,000
Ethiopia	Emami Biotech	Jatropha, pulses	11,000
Ethiopia	Emami Biotech	Oilseeds	40,000
Ethiopia	S&P Energy Solutions	<i>Pongamia pinnata</i>	50,000
Ethiopia	VATIC International Business	Jatropha	20,000
Ghana	Abellon CleanEnergy		10,000
Mozambique	Kijani Energy	Jatropha	75,000
Mozambique	Tata Chemicals	Sugarcane	24,000

Source: Based on statistics in GRAIN, 2013.

<sup>33</sup>See the Emami Biotech webpage at [www.emamibiotech.com/cultivation/cultivation.aspx](http://www.emamibiotech.com/cultivation/cultivation.aspx).

<sup>34</sup>See [www.abelloncleanenergy.com/Abellon-RnD.aspx](http://www.abelloncleanenergy.com/Abellon-RnD.aspx).

## India 'out there'

The Indian agricultural scientist Dr Swaminathan, considered the 'father of the Green Revolution', has suggested that a global agricultural service cadre be created for Indian agricultural R&D to go 'out there' and help the developing nations in Africa and Asia (cited in Kulkarni, 2013). This idea is much like the United States Foreign Agricultural Service (FAS), which has a worldwide presence (including in Africa), to promote US agricultural technologies while scouring for markets for US agricultural products.<sup>35</sup>

The twin dynamic of African countries wanting to collaborate with India on science and technology coupled with the Indian research establishments aspiring to go international, has led to the forging of several collaborations in the continent. These take diverse forms – ranging from MoUs to co-operate for agricultural R&D to agreements for sourcing agricultural products and services from Indian manufacturers and suppliers.

If the word 'tractor' symbolises the changing story of Africa's agricultural machinery, the word 'training' symbolises the relationship in

agricultural R&D (Box 7). This happens at multiple levels, either through ICAR itself, the agricultural research institutes under it or the state agricultural universities (SAUs).

There are ongoing technical assistance programmes directly involving ICAR, such as the Cotton Technical Assistance Programme (Cotton TAP).<sup>83</sup> The 2012-2014 programme is being undertaken in Benin, Burkina Faso, Chad, Mali, Malawi, Nigeria and Uganda under ICAR's Directorate for Cotton Development.

While addressing the second India-Africa Forum Summit in Addis Ababa in 2011, the Indian Prime Minister suggested setting up an India-Africa centre for medium-range weather forecasting to harness satellite technology for the agriculture and fisheries sectors; he has also announced an India-Africa institute of agriculture and rural development. Bilateral collaborations with different African countries are also in the pipeline, such as establishing a Farm Science Centre in Burundi as agreed with Burundi's Agriculture and Livestock Minister,<sup>36</sup> or intensifying India's relations with Liberia in the agricultural sector through model agricultural projects with the help of ICAR scientists.<sup>37</sup> India's agricultural R&D outputs and services are clearly

### Box 7: Training Africa

'Under India's Indian Technical and Economic Cooperation (ITEC) programme, in operation in Africa since 1964...2,045 training positions have been proposed. In all these areas and new ones such as agriculture and agro-processing...much more needs to be done and quickly.'

First Indian Council of World Affairs Africa-India Academic Conference on Africa and India:  
A Partnership for Development and Growth, May 2011

'There is now an ITEC Civilian Training Programme (2012–2013) for middle & senior level government officials, research scientists and officials working in the agricultural and rural sector.'

ITEC Training Brochure 2012-2013, [http://itec.mea.gov.in/ITEC\\_Brochure\\_2009-10.pdf](http://itec.mea.gov.in/ITEC_Brochure_2009-10.pdf)

'The main thrust of India's engagement consists of capacity building and human resource development. India has contributed to capacity building initiatives as well. It is providing 300 new scholarships, especially in agricultural sciences through the African Union Commission to be implemented by the Department of Agriculture Research and Education (DARE) and the Indian Council of Agricultural Research (ICAR). Seventy-five students (25 Doctoral and 50 Masters) will be enrolled each year for a period of four years. The ICAR will also provide two-to-four-week-long customised trainings in water conservation and utilisation; production of seed, sapling and planting material; livestock production; fisheries production; farm mechanisation; post-harvest processing and value-addition. This will provide a continuing engagement and the skills acquired are expected to be ploughed back into their home countries.' (Modi, 2011).

<sup>35</sup>See the USDA Foreign Agricultural Service [www.fas.usda.gov](http://www.fas.usda.gov).

<sup>36</sup>See the announcement on the Ministry of External Affairs' webpage: [www.mea.gov.in/incoming-visit-detail.htm?20620/Joint+Statement+on+the+State+Visit+of+President+of+Burundi+to+India](http://www.mea.gov.in/incoming-visit-detail.htm?20620/Joint+Statement+on+the+State+Visit+of+President+of+Burundi+to+India)

<sup>37</sup>Information obtained from Wikipedia page on India-Liberia relations: [http://en.wikipedia.org/wiki/India%E2%80%93Liberia\\_relations](http://en.wikipedia.org/wiki/India%E2%80%93Liberia_relations).



Orientation Programme for African Students at the ICAR in March 2012

much sought after by African governments.

As these examples show, GoI's intent to play a much bigger role in the design of African agriculture is evident. Indian NARIs seem to speak for the GoI's policy, rather than for the agricultural science that they work for. There is no official statement on, or independent assessment by ICAR of, the science that it is

exporting to Africa.

### *The influence of state agricultural universities*

Some Indian SAUs, such as the Tamil Nadu Agricultural University (TNAU), export agricultural technologies to African countries even while facing protests against them on their home ground, for example the use of modern biotechnology in food crops.<sup>38</sup> TNAU has been a frontrunner in forging deep working relations with the corporate sector in India through its in-house Directorate of Agribusiness Development. An MoU for the transfer and dissemination of 'innovative farming technologies' was signed by TNAU with the Embassy of Mali in March 2011, obliging it to 'look after all the formalities related to government policies for receiving the technical and material support from TNAU' (see Annex V). Public oversight of such arrangements becomes a challenge for ordinary people. If peer-to-peer or even farmer-to-farmer co-operation is not facilitated, many such arrangements could preclude people's participation in agricultural R&D decision-making processes (Box 8).

Meanwhile, interactions between Indian

#### Box 8: Secrecy in research agreements

A five-year MoU (2007 to 2012) between ANGRAU and Uganda's Makerere University contains three notable features (the full text is contained in Annex I):

- **Confidentiality** (see paragraph 8). The obligation to hold in confidence all that is defined as 'confidential information' may sound as standard operating procedure for agreements such as this. The fact is that the demands of business, technical or financial information require that it be kept secret. As the MoU states such information may only be shared subject to "confidentiality agreements" and only then passed on to "potential co-operators". Often the co-operation is with the corporate sector. Such a provision then also privileges the companies over local communities.
- **Intellectual property rights** (see paragraph 9). The provision in the MoU is yet another example of how the IP system has been embraced by the public sector in developing countries. Pre-WTO, seeking and enforcing IPR on the products of research was not in the working culture of NARIs either in India or Africa. Outputs from public R&D systems ought to be publicly available. On the contrary this is precisely how through putting in practise IP provisions private rights over living matter (seeds, breeds, etc.) are made the rule. The endeavour instead ought to be to develop South-South models to reward innovation drawing from the knowledge cultures of the farming communities in both Asia and Africa, rather than following the IP standards advocated by the global trading system that are also being accommodated by the international agricultural research centres (IARCs). "Statutory IP protection" as granted by laws for formal plant breeders do not grant equal protection to the innovation of small farmers.
- **Corporate presence:** 'JN Agri Tech International Ltd. Uganda will liaise between ANGRAU and MU in successful implementation of this MoU.' This MoU is not readily available and it had to be procured by a right to information request sent to ANGRAU (see Annex I). The process of its negotiation also did not involve farmers on either side. This is not an exceptional MoU or different from how agreements are routinely finalised between NARIs from two different countries. That precisely is the problem, as pointed out by groups like ADARSA. Clearly things will need to change if decision making in agricultural R&D is to be democratised.

<sup>38</sup>See IndoLink, [www.indolink.com/displayArticleS.php?id=102910101822](http://www.indolink.com/displayArticleS.php?id=102910101822).

SAUs and African universities are becoming more common though they are neither publicly announced nor their details made available (Box 8). Take, for instance, the activities promoted between the Acharya N.G. Ranga Agricultural University (ANGRAU) in South India and the Makerere University in Kampala, Uganda (Annex I). There are also more casual exchanges, such as visits by African delegations to the SAU in Junagadh, Gujarat in West India.<sup>39</sup> Some visits also develop into broad agreements to work together. Others result in MoUs for providing training to Africans in agriculture-related areas, for example the MoU signed in 2010 for a five-year period bringing together Junagadh Agricultural University (JAU), the University of Venda and the Madzivhandila Agricultural College in South Africa (Annex III).

The main objective of any India-Africa technology partnership programme is to facilitate the transfer of Indian technology to African nations, to build capacity in the recipient nations in order to absorb the new technologies, and to help Indian industries gain access to African markets (Table 5). This implies a traditional linear process through which research products are passed on for dissemination to farmers. India's offer to 'help' Africa also reflects the mindset of its own opinion-makers: that farmers need to be trained.

Agricultural research staff across the board are being trained for the 'new' agriculture. The India-Africa Forum Summit (IAFS) has begun agricultural scholarship schemes in various Indian

agricultural universities for African students. Special agriculture scholarships are also being supported by the ICAR and the AU (India Africa: A shared future, 2012). A special science and technology fellowship scheme, the CV Raman Fellowships, has been instituted under the provisions of IAFS-I. African leaders are also looking to build scientific and technological human resources in Africa through the Pan-African University – for which Africa has requested India to be the lead partner in the Life and Earth Sciences segment.

### India-USA partnerships and their influence on African R&D

Several factors outside India and Africa come to bear on the nature and extent of their agricultural collaborations; the most important relationship to consider is the one between India and the United States (Box 9). There have been some big shifts in this relationship, and its trajectory shows how India has come to be a strategic partner for the USA's own interests in Africa. This reinforces the asymmetric relationship that Africa has with the West.

At the 2002 UN Conference on Financing for Development in Monterrey, the United States helped forge a new international consensus on development, and the need for agricultural development in particular, giving centrality to the idea of market-oriented growth. The United States' intention to apply modern biotechnology to agriculture in the 'South' has made both India and Africa target markets for

**Table 5. Memoranda of understanding between Punjab Agricultural University and African countries**

Name of institution/collaboration	Field
University Venda for Science & Technology, South Africa (Limpopo Province)	Faculty & student exchange programmes
Mozambique	Faculty & student exchange programmes
The Institute of Superior Polytechnic of Manica, Mozambique	To undertake collaborative research on mutually agreed themes/subjects
The Higher Institute of Agriculture & Animal Husbandry University, Busogo, Musanze, Rwanda	Development of effective mechanism in transfer of technology in the fields of curricula development & improvement, crop improvement, natural resource management, farm power & machinery and crop protection

Source: Information received in response to an RTI application by author to Punjab Agricultural University, Ludhiana

<sup>39</sup>Tv9 Gujarat footage (in Gujarati language) on African delegation's visit to JAU <http://www.youtube.com/watch?v=4zKPqsUGr-k>

### Box 9: Views from the US government of India's role in Africa

'...As a sign of India's global development and economic leadership, we have also started to collaborate on assistance activities, such as women's empowerment and capacity building activities in Afghanistan, **and food security in Africa.**

We have also embarked on a far-reaching dialogue on agricultural cooperation. In addition to the food security activities that the US and India will initiate in Africa, we also discuss farm-to-market linkages and weather and crop forecasting...'

Robert O. Blake, Jr. Assistant Secretary,  
Bureau of South and Central Asian Affairs, Washington,  
DC Testimony before the House  
Foreign Affairs Committee, Subcommittee  
on the Middle East and South Asia<sup>40</sup>  
5 April 2011

the US's genetically engineered (GE) products. India and Africa were seen as near equal in status as beneficiaries of many US aid projects. One such project is the USAID's Agricultural Biotechnology Support Project (ABSP) II.<sup>41</sup> Its objective is to introduce and promote GE crops in Asia and Africa (GRAIN, 2005). The working partners targeted for this were NARIs in both continents, such as the Kenyan Agricultural Research Institute and several state agencies and agricultural research institutes in India.<sup>42</sup>

The US works in other ways in both India and African countries to develop policy frameworks for sharing agri-biotech intellectual property using public-private partnerships (PPPs). This will hasten the pace at which PPP projects are implemented, and streamline regulatory process for agri-biotech products in order to remove the impediments to such products reaching the market.

There was a major reconfiguration of the US-India relationship in 2006 as India was being seen as an emerging economic power and a strategic market (Lavoy, 2008). This was preceded by a Joint Statement by US President George Bush and Indian PM Manmohan Singh in July 2005

during Singh's visit to the US, which included an understanding on agricultural co-operation. India's Ministry of Agriculture and the United States Department of Agriculture (USDA) agreed to work together for 'a new India' under the US Knowledge Initiative on Agriculture Education, Research, Services and Commercial Linkages (KIA).<sup>43</sup> About 40 premier agriculture research universities, many of whom already have US linkages, were identified for this, including the Indian Agricultural Research Institute, Veterinary Research Institute, Punjab Agricultural University, National Dairy Research Institute, G.B. Pant University of Agriculture and Technology, Tamil Nadu Agriculture University, University of Agricultural Sciences, Bangalore and the Haryana Agriculture University. Many of these are now also engaged in India's African work. The KIA was strongly criticised by local farmers and sustainable agriculture groups in India for several reasons, including the presence of the US multinational companies ADM, Monsanto and Walmart, on the Board of KIA and in resistance to the wider US influence in India's agriculture and related R&D (Kuruganti, 2007; Goswami, 2010).

#### *A green revolution in Africa*

The constant refrain underlying agricultural collaboration driven by the private sector is that Africa needs to emulate India's 'Green Revolution' (GR), from which experience Africans also want to learn (SIFY News, 2010). However, the history of the Green Revolution in India is also the history of US intervention in agricultural research, both in India and globally. US political and financial support not only allowed the GR to be rolled out in India, but also the global system of international agricultural research centres (IARCs, see below) to be designed.

The Alliance for a Green Revolution in Africa (AGRA)<sup>44</sup> is being sold as Africa's turn to catch

<sup>40</sup>For the full text of the Testimony see: [www.state.gov/p/sca/rls/rmks/2011/160020.htm](http://www.state.gov/p/sca/rls/rmks/2011/160020.htm)

<sup>41</sup>See <http://absp2.cornell.edu>.

<sup>42</sup>For a list see <http://absp2.cornell.edu/consortiumpartners/>

<sup>43</sup>The full text of the agreement can be viewed at [www.csrees.usda.gov/nea/international/pdfs/india-declaration.pdf](http://www.csrees.usda.gov/nea/international/pdfs/india-declaration.pdf)

<sup>44</sup>See [www.agra.org](http://www.agra.org).

up, but this in itself is another example of US diplomacy at work, for it provides an opportunity to market US agricultural technologies as well as gain some influence over what Africa's food and farm systems should look like. One of the founding partners of AGRA is the Rockefeller Foundation, which also funded the first Green Revolution in India. The other founding funder is the Bill and Melinda Gates Foundation. The Indian connection in AGRA is well established through Dr Usha Barwale Zehr, Joint Director of Research at Maharashtra Hybrid Seeds Company Limited, India, which is Monsanto's Indian face. Dr Zehr is on the Board of Directors of AGRA.<sup>45</sup> Dilip Gokhale, an ex-Syngenta Indian seed expert, works in AGRA to assist in developing its African seed companies. The focus of AGRA's Programme for African Seed Systems is on high-yielding seeds, mostly hybrids; greater scope for seed companies; breeder seeds and private sector seeds versus farm-saved seed; as well as training a new generation of agricultural researchers. But is this so-called 'revolution' being pushed in Africa without first considering the lessons learned from the Indian experience? In any case, a uniform approach to agricultural R&D cannot be applied across Africa. There are such diversities across the continent and within countries that it is not useful to talk of Africa as a whole.

Other initiatives run by the US in Africa through USAID involve Indian NARIs. For example, the USAID-funded Innovative Agricultural Research Initiative (iAGRI)<sup>46</sup> is to run from March 2011 to February 2016, involving Punjab Agricultural University and the Tanzanian National Agricultural Research System. Its activities include iAGRI trainees being brought to Punjab Agricultural University in India for Masters-level studies in soil and water engineering, botany, and business administration with a focus on agriculture.

Punjab Agricultural University is the preferred destination for African agricultural scientists, as the state of Punjab is seen as the pioneer of the Green Revolution. A 30-member delegation from African countries visited Punjab Agricultural University and the Central Institute of Post-Harvest Engineering and Technology (CIPHET) in Ludhiana in North India in 2013. The delegation from Liberia, Kenya and Malawi made this trip under the US-India-Africa triangular international training programme: New Dimensions in Agricultural Extension Management (*Hindustan Times*, 2013).

A 'second Green Revolution' (GR II) is presently being rolled out in India, with the intention of reaching areas of India which were unaffected by the first Green Revolution. This is being driven by the Borlaug Institute for South Asia (BISA).<sup>47</sup> BISA is designed as a new international agricultural research institute based in India, with political support from the US, and centres at Ludhiana in Punjab, Pusa (Samastipur) in Bihar and Jabalpur in Madhya Pradesh. It is also envisaged to have influence beyond India's borders. The scientific work embedded in BISA is already being linked to Kenya, and it is envisaged that the institute will play an important role in maize and wheat improvement and training in Africa. It also intends to further links between South Asia and CIMMYT,<sup>48</sup> the CGIAR Centre based in Mexico with wheat and maize as mandate crops (CIMMYT Blog, 2011). Finally, BISA is to co-ordinate training programmes for international agricultural leaders from developing countries such as Iraq, Pakistan, the Philippines and several African nations.<sup>49</sup>

'Experience in India and the USA has shown that collaborative research efforts between university, national and international research institutions and government departments can greatly enhance the impact of research in agricultural development.'

Prof. Gerald C. Monela, Vice Chancellor, Sokoine University of Agriculture in his opening remarks at a workshop on 3 August 2012 (USAID/iAGRI, 2012)

<sup>45</sup>See <http://www.agra.org/who-we-are/board--staff/board-of-directors>.

<sup>46</sup>See [www.iagri.org](http://www.iagri.org).

<sup>47</sup>See <http://bisa.org>.

<sup>48</sup>CIMMYT is the International Maize and Wheat Improvement Center.

<sup>49</sup>See <http://borlaug.tamu.edu/about>.

### *Feeding the future?*

India is positioned as a strategic partner in the US's Feed The Future (FTF) initiative, with a focus on sharing Indian innovations with African countries.<sup>50</sup> Under FTF, the Obama Administration focuses on four geographic areas with high rates of poverty and malnutrition but the potential to transform their agricultural systems:

- the South Asia region of Bangladesh and India
- the African Sahel region (mainly northern Ghana and southern Mali)
- the Ethiopian highlands
- the maize-growing region of eastern and southern Africa.

Dr Julie Howard, USAID chief scientist and the agency's senior adviser for agricultural research, extension and education, explains that, 'Research is at the heart of Feed the Future.' According to Howard, USAID spent US\$120 million on crop and animal research and training in 2012, three times the amount it spent in 2008.<sup>51</sup> With its geographic focus on India and Africa, farmers in both these areas will be at the receiving end of the US agricultural research outputs. Agribusiness leaders in ITC, PepsiCo, Mahindra and Mahindra, Field Fresh and others have experience with investments and innovations all along the value chains. These business ventures have been roped in to create firm-farm linkages.

Under the FTF, the first agricultural training programme of the India-US-Africa triangular partnership began in Hyderabad, India in 2013 (USAID, 2013). Led by USAID and the Indian National Institute of Agricultural Extension Management (MANAGE), this three-year training programme is intended to build the capacity of 180 agriculture professionals from three African countries by providing

extension management, agricultural marketing and agribusiness training at MANAGE in Hyderabad, Andhra Pradesh and at the Chaudhary Charan Singh National Institute of Agricultural Marketing in Jaipur, Rajasthan.

USAID Delhi has also sought expressions of interest in the India-Africa Agriculture Innovation Bridge Programme. This is a private sector-focused initiative to pave the way for future global partnerships. The Bridge platform invites proposals from Indian private sector organisations, multilateral and international organisations to identify proven Indian agricultural innovations for transfer to Africa through triangular engagement involving the US, India and Africa.

### *India, the US and the G8*

G8 countries launched the L'Aquila Food Security Initiative (AFSI) at the 2009 G8 Summit in L'Aquila, Italy.<sup>52</sup> AFSI's main aims are to step up food aid and increase agricultural production.<sup>53</sup> The initiative also has an Indian element. The Indian NARIs and big private players are very much allies with the US in helping to implement the G8's plans to transform African agriculture. Bringing in private sector partners is part of the *modus operandi*. For example, Jain Irrigation is working on this with the G8 (RTT News, 2012). In 2012, the New Alliance for Food Security and Nutrition was announced by the White House as a follow-up. Two Indian-Americans – Raj Shah, the administrator of USAID and Indra Nooyi, ex-CEO of PepsiCo – were among the few special guests invited by US President Barack Obama to a G8 discussion at Camp David (The Economic Times, 2012). Yet there is growing public concern after the G8's 2013 summit about the New Alliance's increasing preoccupation with market orientation and also the growing involvement of the large private sector (CIDSE, 2013).

<sup>50</sup>See [www.feedthefuture.gov](http://www.feedthefuture.gov).

<sup>51</sup>US Steps up Funding for Agricultural Research <http://iipdigital.usembassy.gov/st/english/article/2012/03/201203132013.html#axzz1pDPUKcpz>

<sup>52</sup>G8 is the group of the world's largest economies, including Canada, France, Germany, Italy, Japan, Russia, UK, USA & EU.

<sup>53</sup>For more see [www.state.gov/s/globalfoodsecurity/rls/rpt/laquila/index.htm](http://www.state.gov/s/globalfoodsecurity/rls/rpt/laquila/index.htm)

As a sequel to the signing of the MoU between India and the US on Strategic Cooperation in Agriculture and Food Security in 2010, three working groups were formed, one of which is the Working Group on Strategic Cooperation for Food Security (including trilateral co-operation with African countries). In October 2013, USAID announced three partnerships with Indian organisations to share low-cost agricultural innovations and technologies with African countries (Business Standard, 2013c). A review of the 'the third-country partnership in Africa' is now a recurring feature in US-India bilateral talks.<sup>54</sup>

The US uses its Africa's Growth and Opportunities Act (AGOA) to stimulate 'sustainable transformation through trade and technology' (US ITA, 2013). The Act provides duty-free treatment to US imports of certain products, primarily oil, from eligible sub-Saharan countries. This law is in effect until September 2015, but many in the US are in favour of its indefinite extension. One of the reasons given to extend AGOA is the concern regarding India's growing investments in Africa (Brookings Institution, 2013). On the agricultural front, AGOA will continue to push for creating an enabling environment for scaling up innovative agriculture technologies. However, experience in both India and Africa suggests that the innovations will not be those developed by small farmers, but by the US research industry itself.

The above review of India-US partnerships in Africa reveals that US influence on decisions of agricultural R&D in Africa, both with and without India as a partner, is a force to be reckoned with. It can determine if and how African smallholder farmers pursue their own innovation systems or whether they will eventually be compelled to adopt imposed seeds, technologies etc. Some African governments and even some African farmers

may view this as an opportunity to 'modernise' their agriculture. But with the involvement of the US in the manner mentioned above there ought to be concern that some of the biggest forces behind the re-organisation of agricultural R&D are being unleashed in Africa: the research might be for Africa, but not of or by African farmers.

## The International Agricultural Research Centres in the mix

The CGIAR's international agricultural research centres (IARCs) have been in Africa since the 1970s. Three out of the 15 Centres – the AfricaRice Center, International Institute for Tropical Agriculture (IITA) and World Agroforestry Centre (which has a regional office in India) – have their headquarters on the African continent,<sup>55</sup> while the rest have regional or country offices in Africa.

These IARCs act as supra-national bodies, to all intents and purposes setting the 'megapolicies' for agricultural R&D. Given that these IARCs enjoy diplomatic immunity in the countries where they are located, it is difficult to pin down responsibility for the science that they promote.

The basic premise of these IARCs operating in Southern countries is that as their work has been a success in one country/region, it needs to be replicated elsewhere. Such assumptions have been questioned by farmers' groups. The social, ecological and political impacts of the very presence of IARCs are currently the subject of many debates among groups in India and across Asia, as some of these centres complete 40-50 years of operation and more (GRAIN, 2010). For example, the many small rice farmers of Asia have demanded that the CGIAR's Philippines-based International Rice Research Institute (IRRI) be shut down for practically promoting chemical-heavy water intensive rice farming that destroys soils, farmers' seeds, agro biodiversity and human and environmental

<sup>54</sup>See for example this article in the UK's Daily Mail newspaper: [www.dailymail.co.uk/indiahome/indianews/article-2140524/Hillary-Clinton-India-push-country-reduce-oil-dependence-Iran.html#ixzz1uBJCWHhR](http://www.dailymail.co.uk/indiahome/indianews/article-2140524/Hillary-Clinton-India-push-country-reduce-oil-dependence-Iran.html#ixzz1uBJCWHhR)

<sup>55</sup>AfricaRice (previously WARDA), for instance, was created in 1971 by 11 African countries. Today its membership comprises 24 countries covering West, Central, East and North Africa – namely Benin, Burkina Faso, Cameroon, CAR, Chad, Côte d'Ivoire, Democratic Republic of Congo, Egypt, Gabon, the Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Madagascar, Mali, Mauritania, Niger, Nigeria, Republic of Congo, Senegal, Sierra Leone, Togo and Uganda.

health, but also politically – for shifting control to the multinational corporations with which it has chosen to partner for its R&D.

Since the 1970s, the CGIAR has itself undergone substantial change (Box 10). It has redesigned itself into a consortium, and is also working more closely with the corporate sector. There has been a perceptible shift in the CGIAR Centres towards PPPs as a preferred mode of working. This is often justified as a means to be able to reach small farmers, given the resources and networks of the large private sector. But it must be recognised that this also shifts control further away from the original ‘clients’ of the CGIAR – the smallholder farmers themselves. Partnering with big business does cause a significant shift in direction towards business interests rather than more human issues.

The CGIAR has this year announced a global partnership with the AU to drive African agricultural research. An MoU was signed between the CGIAR Consortium and the AU Commission to align research agendas with the need for food security (SciDevNet, undated). There is scepticism about how this will fit into ongoing initiatives, such as NEPAD’s Consolidated Plan of Action on Africa’s Science and Technology. This scepticism is based on past

experience. Such international arrangements have neither helped the cause of intra-Africa sharing, nor been able to move many agricultural R&D products from the lab into use. Most importantly, they have not been able to make a perceptible change in the lives of farming communities.

### *Focus on ICRISAT and IRRI*

As the emphasis in this paper is on India-Africa partnerships in agricultural R&D, discussion is restricted to the Indian influence on the work of the relevant IARCs in Africa, and especially the influence of this triangular relationship. There are two IARCs located in Asia – the International Rice Research Institute (IRRI) in the Philippines and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in India. Both – though particularly ICRISAT – have considerable influence on African agricultural R&D. Therefore it is important to understand their mandate in Africa and their part in its agricultural transformation.

IRRI was established in Los Banos, Philippines in 1961, while ICRISAT was established in India in 1972 outside the southern city of Hyderabad in Andhra Pradesh. ICRISAT enjoys generous patronage from the GoI; India has been among its top ten core donors in the past few years. The Indian Council for Agricultural Research (ICAR) and its senior management work very closely with ICRISAT, allowing India to exercise a degree of influence over its research agendas. Working with international centres such as IRRI and ICRISAT suits India’s global aspirations (Bhutani, 2014). It also makes it more sought after in Africa (see Box 11).

The Indian NARIs have worked very closely with IRRI on the Green Revolution and in

#### Box 10: About 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 centres are spread around the globe, with most centres located in the Global South, at Vavilov Centers of agricultural crop genetic diversity. CGIAR Research Centres are generally run in partnership with other organisations, including national and regional agricultural research institutes, CSOs, 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 that receives funds from its members. The membership of CGIAR includes country governments, institutions, and philanthropic foundations.

*Source: Wikipedia and CGIAR, 2011*

#### Box 11: India to sponsor IARCs in Africa?

‘The Board endorsed the idea of South-South cooperation and encouraged management to

- i) bring China and India on board as potential donors,
- ii) tap into their rice expertise as major rice growing nations for collaboration in training young African scientists in India and China.’

Summary & Recommendations of the 28th Meeting of the Board of Trustees of AfricaRice Center (WARDA) 10-14 March 2008

disseminating hybrid rice varieties both within and outside India. Such activities have pushed farmers' own seeds and farming practices to the periphery (PAN AP, 2011). For example, in India it led to the marginalisation of other food crops such as millets, which collectives like the Millet Network of India are now working to revive.<sup>56</sup> An ICAR-IRRI agreement has given other rice-producing countries, including African countries, access to Indian rice research. The ICAR-IRRI collaborative work plan 2009-2012 includes a major project supported by the Bill & Melinda Gates Foundation on stress-tolerant rice for poor farmers in Africa and South Asia (STRASA).<sup>57</sup> Research outputs such as hybrid rice seeds are being grown in many parts of Asia, not only because they are popular among some farmers (generally those who can afford them and the associated inputs, such as fertiliser), but also because of government programmes (such as the National Food Security Mission) and subsidies to use these seeds (Living Farms, 2011).

India also works with IRRI on developing 'Golden Rice' (rice that has been genetically modified to increase its vitamin A content). Originally intended for Asian countries, African countries will also be targeted by the Golden Rice project. This is not the first time that an IARC has adapted a crop variety from Asia to Africa; WARDA was key to the introduction of NERICA, an Asian-African rice hybrid,<sup>58</sup> to Africa (GRAIN, 2009). This is despite the fact that many local African rice varieties lie locked away in CGIAR gene banks, including at IRRI and WARDA. These varieties – developed by African farmers over the past 3,000 years – bear witness to the local knowledge of small farmers. It is the diverse African varieties, which are locally adaptive and farmer-developed, that need to be popularised.

Particularly relevant to Africa is ICRISAT's research agenda for its mandate crops (sorghum, pearl millet, finger millet, groundnut, pigeon pea and chick pea). These crops are central to the

food and farming systems of local communities across the semi-arid tropics. For that reason, ICRISAT has two regional hubs (in Nairobi, Kenya and Bamako, Mali) and four country offices in sub-Saharan Africa (Malawi, Niger, Nigeria and Zimbabwe). ICRISAT is developing genetically engineered varieties of several of its mandate crops. In this area, there is no distinction between the interests of the government of India and ICRISAT; both are keen to go ahead with the commercial applications of these transgenic varieties. Only public concern and action on the issue of biosafety have kept these varieties from being released (Infochange, 2010). There is little legal and technical capacity to deal with the challenges of modern biotechnology in either India or many African countries, yet government policies in India have allowed the biotechnology industry to penetrate into the NARIs and IARCs.

What is of particular significance is not only what research the IARCs carry out, but also how and with whom it is done. ICRISAT was the first among the CGIAR Centres to set up an agri-science park in 2003. It also initiated agribusiness 'incubation' facilities, which hand-hold big and small agribusinesses until they are ready to participate in the market. Similar support is also being given in Africa; in fact many of the seed and food processing companies incubated by ICRISAT in India are also operating in Africa. ICRISAT's decisive shift toward an 'inclusive market-oriented development' model risks putting too much emphasis on the market. The consequence of that is a single-minded goal of integrating smallholders into the market, reducing them to mere 'beneficiaries' of R&D rather than making them active agents in the R&D of agricultural technologies which they might prefer not for their economic value, but for other social, cultural and environmental reasons. Working with businesses has also pushed ICRISAT to adopt more business-friendly intellectual property (IP) practices. It has even changed its

<sup>56</sup>Millet Network of India: [www.milletindia.org/our\\_approach\\_and\\_ideology.php](http://www.milletindia.org/our_approach_and_ideology.php)

<sup>57</sup>ICAR signs ICAR-IRRI collaborative work plan 2009-2012: [www.icar.org.in/en/node/430](http://www.icar.org.in/en/node/430)

<sup>58</sup>Made by crossing the African *Oryza glaberrima* with the Asian *Oryza sativa*, which do not naturally interbreed.

own IP policy to accommodate the demands of the large corporations that zealously guard 'their' IP-protected research tools and products (Bhutani, 2014).

ICRISAT was, by its very design, intended to be a bridge between India and sub-Saharan Africa. The experience sharing and exchange of agricultural expertise between India and African states indeed has value. However, the real test is if it has responded to the concerns of small farmers from both continents. It may be fair to say that if ICRISAT had truly facilitated farmer-led, farmer-centred R&D and helped to institutionalise a bottom-up approach in agenda-setting, there would have been far less space for other players – foreign governmental agencies, donors and large corporations – to make the inroads into Africa's agriculture that are being made today. In fact, over its 40-year lifespan ICRISAT has moved closer to those very players that only reinstate an agricultural R&D model based on the products of Northern multinational companies.

ICAR is an active partner with ICRISAT in the CGIAR research programmes which it leads on grain legumes and dryland cereals. Joint R&D is also carried out with several Indian state agricultural research institutes (Table 6). ICRISAT and Junagadh Agricultural University are collaborating on an international project on genetically enhancing micronutrient-dense pearl millet grains to improve human nutrition in Western Africa and India (Annex II).

Apart from working with the ICAR, the Indian NARIs, state agricultural universities and CGIAR Centres also work with other

universities in India that reach out to Africa. For instance, through the International Food Policy Research Institute, CGIAR has partnered with the Indira Gandhi National Open University in India to develop a Global Open Food and Agriculture University. This is a CGIAR-wide initiative to facilitate teaching in agriculture and related disciplines for people from across the developing world. It plans to provide training and course modules to faculty members of the collaborating universities, initially 10 in Africa and a similar number in Asia.

### *IARCs and the United States*

The IARCs in India also make for a convenient entry point for the United States. A new partnership – the Pigeonpea Genome Initiative – is underway between the governments of India, the US and ICRISAT to take studies in pigeonpea genomics to the next stage of scientific research, which is to use genetic mapping and genome sequencing information for crop improvement through molecular breeding or transgenic approaches.<sup>59</sup> It was initiated in 2006 with funding support from ICAR under the auspices of the US-India KIA. According to Mr Jonathan Shrier – Acting Special Representative for Global Food Security in the US Department of State and head of the delegation to ICRISAT – this is a good example of an international institute and Indian organisations sharing expertise: '(p)art of the interest of the US in working in India is to make use of the tremendous expertise in this country that can help other countries'. The USAID group overseeing this work also expressed strong interest in India-Africa relations, mentioning

<b>Title of the project</b>	<b>Location</b>	<b>Collaboration with</b>
Harnessing Opportunities for Productivity Enhancement (HOPE) for sorghum and millets in sub-Saharan Africa and South Asia	ICAR's Agricultural Research Station (ARS), Durgapura & ARS, Bikaner	ICRISAT
Genetically enhancing micronutrient-dense pearl millet grains for improved human nutrition in Western Africa and India (Harvest Plus Project)	ARS, Durgapura	ICRISAT

Source: Information received from the university following an RTI application by the author

<sup>59</sup>See the International Initiative for Pigeonpea Genomics webpage at [www.icrisat.org/gt-bt/iipg/Home.html](http://www.icrisat.org/gt-bt/iipg/Home.html)

that USAID is now building programmes to train and share business expertise from India organisations in Africa (ICRISAT, undated).

ICRISAT also acts as a forum for partners from India, the US and Africa to come together to develop tri-lateral educational programmes for students, faculty members, extension agents, smallholder farmers and various stakeholders in using ICT, to promote the sharing and use of agricultural information among the poor and marginalised. A global 'OpenCourseWare' platform (allowing free online access to the course) was launched to this end (Commodity Online, 2012).

An India-Africa Partnership in Agriculture, consisting of ICAR, ICRISAT and the

International Agriculture Consulting Group, was launched in 2013. According to Dr S Ayyappan, Director General of ICAR, the new partnership will transform Africa and significantly contribute to global food security. He said that India is committed to the sustainable agricultural development of Africa under the South-South Initiative (cited in Shrivastava, 2013). The significance of this partnership is that three powerful partners will come to bear on agricultural R&D in Africa. If the partnership is to be that of equals from the South, then both sides have to give due consideration and importance to the farmer-led innovation strategies from the countries involved.

## 4. Social and environmental implications

India-Africa partnerships in agriculture and R&D have implications for a large number of people in Africa and South Asia, the majority of whom are living in poverty, in regions that are among the most vulnerable in the world to climate crises and natural disasters. People coming together for 'people's agriculture' from both India and Africa – via networks, exchange visits, joint advocacy, and so on – have the potential to be game-changers in agriculture, as well as the global power game. Both Asia and Africa have a rich agricultural history and their peoples have equally diverse systems of knowledge and innovation; the question is, will these assets be harnessed to determine what type of agriculture is pursued in the future? Such South-South, peer-to-peer relations have the potential to propose real alternatives to the conventional model of research and innovation.<sup>60</sup> This would necessitate a partnership of equal respect, and a shared vision and responsibilities. In the context of agricultural R&D, it cannot simply be a case of India becoming a conduit for the mainstream agricultural research paradigm, and African governments readily permitting this to be planted in Africa's many fields.

Current trends (outline above) suggest that such an equal partnership is not yet taking shape. How the current model affects smallholder farmers in Africa can be illustrated with the stories of seed, agrochemicals and land grabbing outlined below.

### *Seed*

Seed is central to any discussion on agriculture. Farm-saved seed is synonymous with 'seed sovereignty', whereby small farmers have the right to both develop and use their own seed, as well as to save it for future seasons without restrictions. Seed sovereignty has long been an aspect of farmer freedom, but farm-saved seed is in direct competition with seed businesses. This explains why seed multinationals are behind changes in seed laws the world over (putting restrictions on farmers' use of seed), including in India (Bhutani, 2010) and now in Africa. In 2013 the Africa Regional Intellectual Property Organisation (ARIPO) proposed an Africa-wide draft plant breeder's law.<sup>61</sup> This law would make it illegal for farmers to reuse IP-protected seeds for exchange without due permissions or payments.<sup>62</sup> If the draft were to be agreed by the 18 member states of ARIPO,<sup>63</sup> then African farmers would by law only be allowed to save seeds of specified agricultural crops, and then only in quantities of what the law defines as 'within reasonable limits' for use on their own land holding. This means that farmers' seed exchanges might not be permitted, striking at the heart of farmers' rights to seed innovation. For this reason, the draft has met with resistance from farmers' groups, CSOs, and others (Pambazuka News, 2013). Previously, CSOs joined forces to defend the Model Law for the Protection of the Rights of Local Communities, Farmers, Breeders and

<sup>60</sup>Thomas Samuel Kuhn's concept that is used to refer to scientists doing research in a settled paradigm, without questioning or challenging the underlying theory.

<sup>61</sup>The text of the law is available at [www.ip-watch.org/weblog/wp-content/uploads/2013/01/Legal-Framework-ARIPO-PVP.pdf](http://www.ip-watch.org/weblog/wp-content/uploads/2013/01/Legal-Framework-ARIPO-PVP.pdf).

<sup>62</sup>Though exceptions to the plant breeders rights are listed in Article 22, not all acts of farmers done privately for non-commercial purposes (such as exchange, barter, etc.) are left untouched.

<sup>63</sup>Botswana, the Gambia, Ghana, Kenya, Lesotho, Malawi, Mozambique, Namibia, Sierra Leone, Liberia, Rwanda, Somalia, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe

Regulation of Access to Biological Resources,<sup>64</sup> which was adopted by the Council of Ministers of the Organisation of African Unity (OAU) (Kuyek, 2002). If only India could offer an honest assessment of its own experience with a PVP law and its real impacts on smallholder farmers, it could perhaps help African policy makers to decide the position to take on the proposed ARIPO Protocol on PVP. In this context it must be said that the GoI has thus far resisted international pressure to become a member of the International Union for the Protection of New Varieties of Plants (UPOV)<sup>65</sup> in order to safeguard the 'farmers' rights' currently provided for in its PVP law. ARIPO's Director General, has already requested the examination of the Draft ARIPO Protocol for the Protection of New Varieties of Plants with respect to conformity with UPOV.<sup>66</sup> UPOV, and particularly its 1991 version, curtails the natural rights of farmers making them subject to the economic rights of corporate breeders. It also puts restrictions on researchers' use of planting material for R&D. This strikes at the very heart of both on-farm research and public R&D.

Farmers' seeds are seen as an obstacle to corporate seeds; therefore the growing influence of the corporate sector suggests that there will be less will for research on farm-saved seed. Profit-oriented seed companies invest in seed technologies, such as hybrids and transgenic seeds, that are protected by intellectual property rights so as to continually guarantee their profits. This explains the interest of the private sector in R&D in such seed technologies,<sup>67</sup> particularly if governments in Africa show little or no interest in supporting farmers' own seed systems.

In 2007, the Report of the High-Level African Panel on Modern Biotechnology suggested creating 'regional innovation communities' and 'local innovation areas' – clusters of universities, professional associations, enterprises and other

actors – as a way of building strength in biotechnology innovation systems in the AU' (Juma and Serageldin, 2007). Thus the Indian experience with modern biotechnology is held up as a possible way forward for Africa.<sup>68</sup> How much this institutional system favours farmers' own innovation systems, particularly on seeds, is debatable.

The kind of seeds promoted in a country indicates the nature of the agricultural R&D that is being promoted. Ever since the so-called 'Green Revolution' in India began in the 1960s, there has been a decline in the use of farmers' own varieties. The high yielding varieties (HYVs) promoted during that phase led to the displacement of farmers' own seeds by public sector-developed 'improved' varieties. In the 1970s and 80s, with World Bank support, the role of private companies in seed production and supply systems was institutionalised. In the 1990s, with the economic reforms in India, the seed sector was further liberalised, and since India joined the WTO, foreign multinationals have been freely allowed to set up and operate in India. Therefore, the large private seed companies in India consist of both purely Indian-owned firms and those in joint ventures with foreign agribusinesses.

Seed companies in India are keen to export to African countries (Kulkarni, 2010). These businesses see an obvious potential market among the large majority of farmers on the African continent who rely on informal seed systems. Some of the Indian companies, such as J K Seeds, Namdhari Seeds, Nuziveedu Seeds, Nath Seeds, Rasi and Vibha Seeds, have already entered the markets in East and West Africa. The MNCs operating in India (like Syngenta, Monsanto and Pioneer) are also trying to expand their business in these regions with the help of germplasm developed in India; they are using their Indian hub to enter African markets.

<sup>64</sup>The full text of the OAU's Model Legislation can be downloaded from the WIPO web site [www.wipo.int/wipolex/en/text.jsp?file\\_id=252153](http://www.wipo.int/wipolex/en/text.jsp?file_id=252153).

<sup>65</sup>For more on how UPOV goes against small farmers see: [www.grain.org/es/article/entries/257-upov-on-the-war-path](http://www.grain.org/es/article/entries/257-upov-on-the-war-path)

<sup>66</sup>The text is available at [www.upov.int/edocs/mdocs/upov/en/c\\_extr\\_31/c\\_extr\\_31\\_2.pdf](http://www.upov.int/edocs/mdocs/upov/en/c_extr_31/c_extr_31_2.pdf)

<sup>67</sup>The major share of investments in agriculture by the private sector in India – about 33 per cent of the total – goes to seed and biotechnology research (Pray & Nagarajan, 2011, cited in Paroda, 2013).

<sup>68</sup>See also Pan-African Actors in the Field of Modern Biotechnology and Biosafety, <http://hrst.au.int/en/biosafety/actors>.

DuPont began setting up its African technology hub in South Africa in 2012 (DuPont, 2013), and this will be connected to the Pioneer global R&D network that has already been established in other countries like India, Brazil and China (Pitt, 2013). With public-private partnerships (PPPs) being encouraged by governments in both India and Africa, the public sector and its infrastructure supports these companies' foray into the seed sector. Also, NGOs like the Syngenta Foundation for Sustainable Agriculture promotes not only Syngenta Corporation seeds, but those of its business partners, such as Vibha Seeds and East West Co. It sees its role as converting what it calls 'pre-commercial' smallholders into 'commercial smallholders' (Barker, 2013).

Seed companies decide which seeds are to be tested for growing and sale. Farmers' choices can be severely restricted to what the company supplies if they do not have access to other types of seeds, such as through informal exchanges. In India, such as in the state of Karnataka, artificial shortages in public seed supply are created under the influence of the big seed companies, so as to stimulate demand for Bt cotton hybrids (engineered to produce an insecticide) sold by the corporate sector. Government seed departments can themselves begin to rely too much on large private seed companies to conceal their own inadequacies. India's Lucky Group claims that it has been field testing GE Bt cotton and other cotton hybrids in Sudan for the last two years, in collaboration with the Agricultural Research Corporation of Sudan.<sup>69</sup> Six hybrid varieties were introduced from India. Cotton is a significant crop for many African countries and its cultivation accounts for a large share of rural employment; this constitutes a large captive consumer base. The company is likewise involved in crop 'improvement' programmes on maize (in Sudan), rice (in Madagascar) and sugarcane (in Eritrea). With companies pre-determining the seed technologies, they can also

prescribe the other inputs that have to be used as part of the package. This is particularly the case with chemical pesticides and fertilisers. For small farmers to have genuine options to choose from, their own informal channels of seed supply and the related production techniques need to be supported.

### *Agro-chemicals*

Big players<sup>70</sup> are keen that India and Africa form joint ventures in the area of fertilisers (*The Economic Times*, 2013). India is already a big supplier of generic pesticides to the African world. This finds favour with governments in Africa, as farmers in most African countries have severely limited access to seed and chemical inputs due to low levels of domestic production and trade. The success of India's 'Green Revolution', which African governments are keen to replicate, is often associated with fertiliser use. Africa has huge deposits of raw material like phosphate and potash for fertiliser production, and fertiliser manufacturers would like to tap into that potential. Moreover, there are few competing government policies promoting 'alternatives' in the form of small-scale organic and natural methods of farming. Back home in India, fertiliser subsidies remain a highly contentious political issue. After oil and food, fertilisers account for the third biggest share of India's total subsidy bill. Yet their use is tilted in favour of larger farmers who can afford such inputs. And, if used on their own without other soil improvement measures such as the application of farmyard manure or rotation with legumes, their negative effects on soil health can be serious.

### *'Land grabbing'*

One of the biggest stories to emerge in the context of African agriculture in the past five years is that of the acquisition of large tracts of arable land by foreign investors, including those from India. As a whole, Africa has several

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<sup>69</sup>See the PowerPoint presentation given by the Lucky Group at the CII Africa Conclave, available at [www.ciafricaconclave.com/images/Lucy.pptx](http://www.ciafricaconclave.com/images/Lucy.pptx).

<sup>70</sup>Such as India's Sun International group, which is also a member of the India-Africa Business Council and deals in finished fertilisers and fertiliser raw materials.

times the land area of India, and India is set to become the most populous country in the world. India will thus have an interest in assured access to arable land elsewhere, where it will also be inclined to support agriculture R&D in the crops of relevance to its needs rather than to those of sub-Saharan Africa. Land Matrix, a global land monitoring initiative that tracks land dealings worldwide, has placed India among the top 10 countries that have acquired large tracts of land abroad for agriculture, primarily in Africa and Asia. India ranks eighth, next to China, in a list that includes the USA, Malaysia, United Arab Emirates (UAE) and the UK among the top buyers (cited in Narayan, 2013).<sup>71</sup>

‘Agriculture is one of the seven priority sectors of India’s engagement with Africa.... We import pulses and we will be more supportive of more land being brought under for [sic] cultivation and for value addition and India is the market,’ said India’s Commerce Minister Mr Anand Sharma at an India-Africa partnership conference organised by the Federation of Indian Chambers of Commerce and Industry (cited in Bhaskar, 2010). This quite candidly reveals the Gol’s interest in encouraging Indian enterprises to access land resources in African countries, without openly declaring it as a food security measure for India. This acquisition of land in turn allows for the expansion of Indian agribusiness, and also addresses a geopolitical interest: counterbalancing the growing presence of China in Africa.

The Gol’s Ministry of External Affairs was at the time of writing in the process of formulating a set of guidelines for giving Indian investors – whether Indian nationals, private companies or public sector units – incentives to acquire land overseas. These guidelines, however, were not publicly accessible (despite the author’s attempts to acquire them under the Right to Information law). From the information that is publicly available either in the media or through conversations with government officials, these guidelines were not simply about growing food overseas and promoting sustainable farming;

the focus appears to be on liberalising rules on outward investments.

Nonetheless, this is not merely a one-sided phenomenon. Many African countries have supported Indian companies to acquire vast areas of arable land on long-term lease. For instance:

- The Government of Ethiopia has set aside three million hectares of land for local and foreign investors who are willing to develop commercial farms. It has also created a liberal investment environment by offering several economic incentives to foreign investors. These include a five-year tax break for manufacturers and investors in agro-industrial activities who export at least 50 per cent of their products.<sup>72</sup>
- A huge share of African arable land is left uncultivated due to lack of financing and know-how; for instance in Mozambique only 15 per cent of the 36 million hectares of arable land is used for farming according to Minister of Agriculture, Jose Pacheco (cited by Indo Asian News Service, 2013).
- Angola has 3.7 million hectares of irrigable land, of which only 3.5 per cent is being cultivated.
- Cameroon ‘...need[s] technical support and also finance. India has both, and we request Indian entrepreneurs and firms to come and help us,’ according to the country’s Minister of Agriculture and Rural Development, Essimi Menye (cited in Indo Asian News Service, 2013).

This is then presented as a ‘win-win’ situation for the African government on the one hand, and Indian companies on the other. Given that in countries like Ethiopia the government has control over all land, its policy decisions on land use directly impinge on the current and future choices of its peoples, while jeopardising their immediate needs. Similar phenomena are also seen in other parts of Africa (GRAIN, 2012).

<sup>71</sup>See also the Land Matrix website: [www.landmatrix.org](http://www.landmatrix.org).

<sup>72</sup>As endorsed by the Ethiopian Investment Agency. See also: <http://m.state.gov/md100861.htm>

However, this trend now appears to be meeting resistance, as the spotlight shifts onto land-use policies and the security of tenure of smallholders. For example, a recent violent attack on a tea plantation in Ethiopia leased by Indian-owned Verdanta Harvest Plc, a subsidiary of the Noida-based Lucky Group, has renewed concerns over Ethiopia's policy of leasing out large tracts of land to international investors. Rights groups have warned that a policy of leasing out 42 per cent of Gambella's land and resettling over 30,000 agro-pastoral communities is the likely cause of the unrest (*The Hindu*, 2013). Resettlement of communities can become a major issue. Ironically, India itself faces a huge

internal problem with displaced persons and 'development refugees'. The central and state governments competed with each other to make land accessible to foreign investors for large development projects, special economic zones, and so on; and with agriculture R&D unable to respond to the urgent needs of smallholder farmers, rural India is now in crisis on multiple fronts. People are migrating away from rural areas. Having less and less land to farm adds to the Indian government's justification for seeking land overseas. Given these experiences of land use on its own soil, the GoI ought to be particularly cautious about becoming part of the same problem in Africa.

## 5. Conclusions

India will no doubt continue to be a 'rising power' on the African continent in the years ahead. This is particularly true of agriculture, where the Indian footprint is perhaps the largest and can also touch the greatest number of people. It is important to keep track of how that is happening. As we saw earlier, there are three axes to the relationship: evolving Indo-African bilateral political and economic relations; India-US collaboration affecting Africa; and the influence of CGIAR international agricultural research centres, particularly ICRISAT in India. These three axes are mutually supportive and are 'locking-in' African agriculture into global – and increasingly, corporate-controlled – markets.

Unfortunately, it will not be the African small farmer who is on the rise, nor the rich and varied knowledge systems that have been developed by millennia of farming in Africa and India. This paper shows that the lion's share of collaboration between India and Africa is focused on a model of agricultural modernisation and growth that may well further marginalise smallholder farmers from decision making on agricultural R&D. Moreover, the Indo-African partnerships are wedded to the same concept of modernity and the same development model that has created massive social and environmental problems for the majority of people in rural India.

The India-Africa relationship is now being driven by an agenda of 'straight economics'. The agriculture that is being exported from India to Africa is ensconced in economic diplomacy. Rather than its design emanating from smallholders' needs, it is mostly contributing to the further rise of powerful global economic forces. In the agricultural R&D field, the triad of government sector, scientific community

and industry may very well determine – just as it does in India – the kind of agriculture that African farmers will pursue and the challenges that they will have to confront.

Agriculture is often said to be a source of great hope for Africa, both for jobs and investment, and as a way to address hunger and food insecurity (see for example, IDS, 2013). There is heightened political consciousness that agriculture in Africa and India is the key to the 'development' of an impoverished multitude; but the long-term visioning seems amiss. That vision will define the futures not only of communities, but of whole countries. Politicians and businesses alike seek quick returns for power and profit respectively, and do not necessarily have the interests and aspirations of the vast majority of smallholder farmers at heart.

The mainstream thinking is that Africa 'missed' the Green Revolution but can be made to leapfrog into the 'Gene Revolution'. That is why India is seen as a natural Southern partner. But India is sharing its expertise on revolutions that were not purely of its own making. There are side-effects of these so-called revolutions: increased use of agro-chemicals, water resource pollution and depletion, soil degradation, loss of local seed systems and biodiversity due to monoculture, women's disenfranchisement, and so on. Information on these effects, which India still faces years after introducing the Green Revolution's high-yielding seed varieties, are not being shared here.

The potential grassroots revolutions that build on farmers' own knowledge and innovations may be lost in the clamour of economic summits and business interests. The many agricultures of the African continent and the Indian sub-

continent might shrivel if they are not – literally – given any fertile ground in which to sprout. A big opportunity is being missed for a farmer-centred, more resilient, indigenous agricultural revolution that draws on the rich agrarian histories of both India and Africa when it is most needed, at this time of increasingly rapid and unpredictable change, including to the climate.

When the disappointments emerge and deepen there are also friendships and solidarities at stake. The India-Africa relationship does not really involve 'South-South' co-operation; it is merely another value chain for big business. The India that is going to Africa is its very own 'North' - symbolised by the tractors, test tubes and transgenics against which its own local communities are also struggling. India will certainly be one of the drivers of change, but by pushing small subsistence agriculture into market-oriented agricultural production.

The democratic deficit in governance shows itself in the arena of agricultural R&D. The technology, too, comes bundled with hierarchies. Science and technology is failing to challenge governments, but people in both India and Africa need to challenge them together. Although this paper is meant to be a view from India, there is also African agency in this change; this will need to be collated and deciphered from that side too. It is hoped that this triggers similar inquiries on the African side, or even jointly. This is both an expression of solidarity from ADARSA as well as a call for joint action with potential partners in Africa for a real 'revolution' towards small farm agriculture. It is hoped that collective analysis and action can help take forward popular aspirations in both India and Africa, particularly on such vital issues as food, farming and (agri)culture.

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# Annexures

Annex I: MoU between Acharya N G Ranga Agricultural University, India and Makerere University 2007

**MEMORANDUM OF UNDERSTANDING**  
Between  
**ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY**  
(Rajendranagar, Hyderabad, Andhra Pradesh, India)  
And  
**MAKERERE UNIVERSITY**  
(P. O Box: 7062, KAMPALA, UGANDA)

In accordance with a mutual desire to promote activities between our two universities, **Acharya N.G. Ranga Agricultural University (ANGRAU)** and **Makerere University** agree to the following statement of intent on cultural, educational and research cooperation.

Cooperation and development of activities may extend to any fields and subjects in which the two universities may identify shared interests. Cooperation in specific areas may be designated by mutual consent and incorporated into specific additional Memoranda of Understanding upon signature by the appropriate university and other authorities.

The two universities agree to the following general areas of interest and cooperation:

**1. The exchange of scholars and academic staff to conduct research of mutual interest.**

This MoU lays the foundation for a collaborative partnership between ANGRAU and Makerere for conducting research of mutual interest in agriculture and other allied fields for the benefit of faculty and students.

**2. The exchange of faculty for lectures and short term visits for distance education.**

Short-term visits to the campuses of both Universities provide faculty access to libraries, classrooms, information and distance learning materials and techniques. The exchange of faculty for lectures and short-term visits provides faculty of both Universities access to subject experts at the partner institution and

facilitates the continued delivery of lectures from the distance education archives.

### **3. Invitations to Scholars for participation in Conferences, Symposia, Instruction, Research and Training.**

This MoU provides opportunities to exchange academic staff and post-graduate students from both Universities as visiting scholars to participate in Conferences, Symposia and short courses for specific training needs. Academic staff and post-graduate students shall be exchanged as visiting scholars for joint research projects or other agreed upon professional activities for one academic year or any period of time agreed upon by the respective Universities.

### **4. Exchange of information, academic materials and publications in fields of mutual interest.**

This MoU facilitates the exchange of information, academic materials and publications required for quality education and research in areas of mutually identified critical needs and challenges facing both India and Uganda in Agriculture and allied areas.

### **5. Facilitating the mobility of faculty and students through exchange and visits between the two Universities.**

The exchange of faculty for at least one semester ensures exposure of faculty to international perspectives. It also helps faculty to teach more effectively at the undergraduate level in fields of their expertise. The exchange of students enhances their exposure to agricultural conditions, technology and research in the other country, as well as access to library, lecture and distance-learning resources.

### **6. Finances, other terms and conditions.**

Both parties agree that all financial arrangements necessary to implement this MoU or any subsequent Memorandum of Understanding must be negotiated according to the regulations of each university and depend on the availability of funds. Both parties recognize that this MoU establishes a foundation of mutual understanding and interest and does not in itself entail any financial obligation for either university.

The J.N Agri-tech International Ltd., Uganda will liaise between ANGRAU and MU in successful implementation of this MOU.

#### **7. Duration, Termination, Modification, Law Applicable and Dispute Resolution**

The Memorandum of Understanding is subject to modification by any one of the parties thereto with the concurrence of the other party. Any modification must receive approval of the relevant authorities.

The Memorandum of Understanding may be cancelled at anytime by either party, upon a required minimum three-month notification, and to be effective at the end of the then current academic year.

The Memorandum of Understanding shall be in place for a period of 5(five) years subject to renewal by the mutual consent of both Parties.

The law applicable to the interpretation and enforcement of the MoU shall be common law and principles of equity and natural justice.

Any dispute that may arise between the Parties as to the interpretation and enforcement of this MoU shall be resolved amicably by both Parties. Where the Parties fail to resolve the disputes amicably, the same shall be referred to mediation and failing which to Arbitration in accordance with the UNCITRAL Rules.

#### **8. Confidentiality**

Each party shall hold in confidence all confidential information disclosed by one party to the other.

Both parties agree not to disclose the information to third parties, and only to release and disclose such information to individuals within the party that are directly involved with the project, on a need to know basis.

Notwithstanding the above, the parties agree that information may be shared by either party, subject to confidentiality agreements with potential cooperators in their territories.

Confidential information can only be used for purposes specifically contemplated in this MoU.

Confidential information means any business, technical or financial information that is, at the time of disclosure identified in writing as confidential or proprietary or would be understood by the parties exercising reasonable business judgment to be confidential, including the contents of this MoU.

Both parties will treat confidential information of the other party with the same degree of care, but with no less than a reasonable degree of care, as it does its own similar information.

The foregoing obligations do not apply to information which:

- i) Is or becomes known by recipient without an obligation to maintain its confidentiality;
- ii) Is or becomes generally known to the public through no act of omission of recipient, or
- iii) Is independently developed by recipient without use of confidential or proprietary information or
- iv) Is required pursuant to any law or order of any court or regulatory directive having jurisdiction over the receiving party.

Unless otherwise agreed in writing, all confidential information remains the property of the disclosing party.

## **9. Intellectual Property Rights**

Nothing in this MoU shall affect party's ownership to any intellectual property rights or any enhancements, modifications or derivatives thereof, (including trademarks, trade name, copyright, patents, designs) belonging to the respective party before the date of this MoU or which has been independently developed outside this MoU during the term hereof.

ANGRAU and National Agricultural Research Organization, Government of Uganda, J.N. Agritech International Limited, Makerere University and Ministry

of Agriculture, Animal Husbandry and Fisheries, Uganda jointly reserve any and all Intellectual Property Rights, without limitation, discovered or produced as a result of the cooperation related to this MoU.

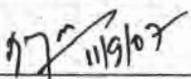
ANGRAU will make available to its developing country partners results of its activities by the most appropriate mechanism, which may include seeking of statutory IP protection where appropriate.

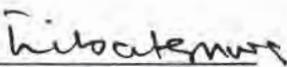
ANGRAU and National Agricultural Research Organization, Government of Uganda, J.N. Agritech International Limited, Makerere University and Ministry of Agriculture, Animal Husbandry and Fisheries, Uganda agree that ownership of any intellectual property generated in the specific cooperative research projects will be determined in advance pursuant to the written agreement for their particular cooperative research project. Specific provisions regarding intellectual property shall be specified in each specific cooperative agreement

NOTE: The MoU will come in to effect from the date of technical approval of the DARE, New Delhi.

For: Acharya N.G. Ranga  
Agricultural University

For: Makerere University

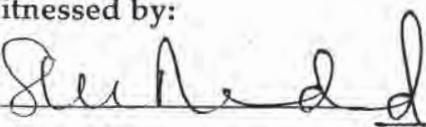
  
\_\_\_\_\_  
Dr. S. Raghuvardhan Reddy  
Vice-Chancellor

  
\_\_\_\_\_  
Dr. Lillian Tibatemwa-Ekirikubinza  
First Deputy Vice-Chancellor (Academic  
Affairs)

Date:

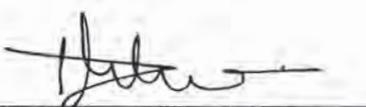
Date:

Witnessed by:

1. 

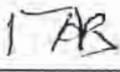
Name: Director

Designation: J.N. Agritech Int (Ug)

1. 

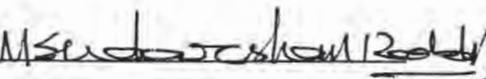
Name: (P. RAGHAVA REDDY)

Designation: Director of Research

2. 

Name: Dean of Agriculture

Designation: Makerere University

2. 

Name: U.M. SUDARSHAN REDDY

Designation: Dean of Agriculture

**SUB-GRANT AGREEMENT**

**BETWEEN**

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

**and**

**Junagadh Agricultural University (JAU)**

This document sets out the terms and conditions of the Project Agreement between the **International Crops Research Institute for the Semi-Arid Tropics** and the **Junagadh Agricultural University** herewith referred to as "ICRISAT" and "JAU", on the project implementation of the "Genetically enhanced micronutrient-dense pearl millet grains for improved human nutrition in the western Africa and India" funded by HarvestPlus Challenge Program of CGIAR.

WHEREAS, ICRISAT as the "Project implementing Agency" desires to set up the mechanism to obtain the collaboration of Junagadh Agricultural University (JAU), in order to carry out the activities required for the implementation of the work as set forth in the HarvestPlus Challenge Program – Phase II Agreement # 5210 between IFPRI, CIAT/HarvestPlus and ICRISAT signed on 19 May 2009;

WHEREAS, JAU as the collaborating partner for this project agrees to implement the work plan, as set out in the attached project work plan.

THEREFORE, ICRISAT and JAU (hereinafter referred collectively as the "Parties") hereby agree to the following responsibilities.

**1. Responsibilities of JAU**

Responsibilities as per the project work plan (attached)

**2. Budget Payments**

The total budget for this sub-agreement is up to Rs.4,00,000 (Rupees four lakhs only).

Payment shall be made according to the schedule set forth below; subject to receipt of funds from HarvestPlus. ICRISAT shall have the right to defer or withhold payment of any installment if the Project Manager determines that JAU has not made satisfactory progress towards the accomplishment of the program of work described herein.

The first installment of 50% (Rs.2,00,000) of the budget shall be paid to JAU immediately upon receipt of the fully signed copy of this agreement.

The second installment of 37.5% (Rs.1,50,000) of the budget shall be paid upon receipt of the mid-term report and financial report from JAU.

The balance and final installment of 12.5% (Rs.50,000) of the budget shall be paid upon receipt of the Final Technical and Final Financial Report from JAU

All payments shall be made in equivalent Indian Rupees through Check or Demand Draft.

**3. Reporting for Mid-Term and Final Reports**

Both, Technical and Financial report shall be submitted to ICRISAT fully signed by the Collaborating Scientist. Financial reports shall be also signed by the Finance Official, and shall contain an invoice for payment as per the schedule below.

3.1 Final Technical and Financial Report should be submitted by 15 January 2011.

Technical Reports: Annual Report shall specify the progress, any actual or proposed

deviations and modifications to the Work Plan, and the results obtained. The reports shall contain sufficient information to enable assessment of the progress and cooperation within the Project.

Format for Mid-Term and Annual and Final reports is as follows:

- I. Summary of Technical Progress (By task in the Work Plan)
- II. Milestones Completed
- III. Summary of Personnel Commitments
- IV. Description of Significant Travel
- V. Current Technical Status (on schedule, behind schedule, ahead of schedule)
- VI. Delays, Problems, Suggestions
- VII. Financial Reporting

Financial Reports: Annual report, as established on the Schedule of Deliverables and Payments, shall be submitted on time to Project Manager, ICRISAT. Financial Reports shall be signed by Finance Official and the Collaborating Scientist and shall contain an invoice, also signed by the Collaborating Scientist and Financial Official. Financial Reports shall be prepared based on the project budget line item template.

#### **4. Intellectual Property Rights**

All matters pertaining to intellectual property rights and publications of results will be governed by the General Provisions of the HarvestPlus Grant Agreement (Annex 2).

#### **5. Points of Contact**

JAU and ICRISAT will each designate a principal point of contact for the implementation of the work plan underlying this project. These officials are identified below:

##### For ICRISAT

Dr K N Rai  
Director, HarvestPlus CP and  
Principal Scientist (Breeding)  
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##### For JAU

Dr C.J. Dangaria  
Research Scientist (Millet)  
Main Pearl Millet Research Stn  
Junagadh Agrl University (JAU)  
Air Force Road, Jamnagar Gujarat  
361 006

Cell: 099252-20549  
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Fax: +91-288-2672112

Email: [rspearlmillet@rediffmail.com](mailto:rspearlmillet@rediffmail.com)

#### **6. Project Termination**

This sub-grant agreement will apply only for the implementation of this project and for the period of Project implementation from 1 Feb 2010 – 31 December 2010. The sub-grant agreement may be executed in counter-parts, is effective on the date of the last signature and will remain in force for the duration of the Project.

The sub-grant agreement can be terminated as provided below:

- a. For Cause: Either party may terminate this Sub-grant for cause, at any time, in whole or in part, as follows: If one Party believes the other Party has failed to comply with the terms and conditions of this Sub-grant (including attachments), it must provide a written explanation of the basis for its determination to the other Party and allow that

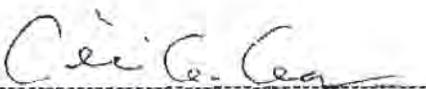
Party a period of 30 calendar days to cure the failure or to present an effective plan to cure the failure. The Party initiating this process must decide to accept or reject the cure within 5 days of receipt of the cure response. If the Party initiating this process does not accept the cure or proposed cure, senior representatives of each Party must meet (in person or via teleconference) within 10 days thereafter to resolve whether the cure is adequate to avoid a termination for cause. Thereafter, if the failure remains, the initiating Party may terminate this Sub-grant for Cause upon written notice.

- b. For Changed Circumstances: If at any time HarvestPlus determines that continuation of all or part of the funding for this Sub-grant should be suspended or terminated because such assistance: (i) would not further the objectives of the Program; (ii) funding for HarvestPlus is cancelled by the donors; or (iii) would not be in accordance with the pre-existing law, then ICRISAT shall notify JAU, in writing, of such termination and direct to stop incurring additional obligations chargeable to the Sub-grant.
- c. For Convenience: The parties, ICRISAT and JAU, may agree mutually to terminate this Sub-grant at any time, in whole or in part, and determine the termination conditions and effective date of termination.

IN WITNESS THEREOF, the representatives of the agreeing Parties duly authorized sign this sub-grant agreement in two originals.

ICRISAT

JAU





Name: William D Dar  
Title: Director General

Name: H. J. Vyas  
Title: Director of Research  
Director of Research

Date: 03 MAR 2010

Date: Junagadh Agril University  
Junagadh,!

**Pearl Millet Biofortification Trials at JAU – Jamnagar****2010 Rainy season****1. Hybrid Trial-3:**

30 hybrids, selected from testcross trial-3 during rainy season 2009 will be re-evaluated in 3 replications for grain yield and agronomic traits; and grain samples will be produced for Fe/Zn analysis.

**2. Hybrid Trial-4:**

30 hybrids, selected from testcross trial-4 during rainy season 2009 will be re-evaluated in 3 replications for grain yield and agronomic traits; and grain samples will be produced for Fe/Zn analysis.

**3. Hybrid Parental Trial:**

40 parental lines involved in hybrids selected from testcross trial 3 and 4 during rainy season 2009 will be re-evaluated in 3 replications for days to flowering, agronomic score, disease incidence; and grain samples will be produced for Fe/Zn analysis.

**4. Designated B-lines Trial:**

40 B-line progenies, selected from designated B-lines trial during rainy season 2009 will be re-evaluated in 3 replications for days to flowering, agronomic score, disease incidence; and grain samples will be produced for Fe/Zn analysis.

**5. Designated R-lines Trial:**

40 R-line progenies, selected from designated R-lines trial during rainy season 2009 will be re-evaluated in 3 replications for days to flowering, agronomic score, disease incidence; and grain samples will be produced for Fe/Zn analysis.

**6. Commercial Hybrids Trial:**

25 commercial hybrids, selected from commercial hybrid trial during rainy season 2009 will be re-evaluated in 3 replications for days to flowering, agronomic score, disease incidence; and grain samples will be produced for Fe/Zn analysis.

**7. Testcross Trial-3:**

150 testcross hybrids will be evaluated as testcross trial-3 in 2 replications for days to flowering, agronomic score, disease incidence; and grain samples will be produced for Fe/Zn analysis.

**8. Testcross parental Trial-3:**

80 parental lines involved in testcross trial-3 will be evaluated in 2 replications for days to

flowering, agronomic score, disease incidence; and grain samples will be produced for Fe/Zn analysis.

**9. Testcross Trial-4:**

150 testcross hybrids will be evaluated as testcross trial-2 in 2 replications for days to flowering, agronomic score, disease incidence; and grain samples will be produced for Fe/Zn analysis.

**10. GRD Land Races Experiment-2:**

26 land races will be evaluated in 2 replications; for days to flowering, agronomic score, disease incidence; and grain samples will be produced for Fe/Zn analysis.

**MEMORANDUM OF UNDERSTANDING**

Entered into by and between

**THE UNIVERSITY OF VENDA**



(herein represented by Prof. Peter Mbatlali in his capacity as Vice Chancellor and Principal)

hereinafter referred to as the "UNIVEN"

and

**JUNAGADH AGRICULTURAL UNIVERSITY**



(herein represented by Dr NC Patel in his capacity

as the Vice Chancellor )

hereinafter referred to as the "JAU"

**WHEREAS**

1. This Memorandum of Understanding is entered into and executed by and between the University of Venda (UNIVEN), situated in Thohoyandou, Vhembe district of the Limpopo Province of South Africa, whose mission is to offer a range of undergraduate and postgraduate qualifications in fields of study that are responsive to the development needs of the South African region, using appropriate learning methodologies and research, and Junagadh Agricultural University (JAU), situated in Gujarat State, India, whose mission is to play a pivotal role in teaching, research and extension education services related to agriculture and allied sciences/sectors.

2. The University of Venda has aligned its vision and mission to the needs of the community at local, national, regional, international and continental levels. The University has also been mandated, by the national Department of Education, to transform into a comprehensive institution offering a broad range of undergraduate, postgraduate and career-focused qualifications. This process of transformation has created significant changes in administrative governance and in the size and shape of the curriculum. It also attracted better qualified staff and resulted in improved student profile.
3. The University of Venda has established itself as a national asset through its strength in nurturing under prepared students from disadvantaged rural areas in particular into nationally competitive graduates and highly educated and skilled pool of academic staff from several countries in Africa. The university has therefore become an important player on the South African higher education landscape, contributing significantly to the human resources and development needs of the country and region. Its vision is to be at the centre of tertiary education for rural and regional development in Southern Africa.
4. The mandate of JAU is:
  - To develop skill/qualification of rural youth through agricultural education in different faculties for the benefit of various agricultural and allied sectors.
  - Planning, execution, promotion, co-operation, monitoring and evaluation of research and its application in agriculture, horticulture, agricultural engineering, animal husbandry, dairy and fishing sciences.
  - To develop machinery to transfer knowledge and technologies to farmers and agricultural organization through extension services.
5. The Commonwealth has facilitated contacts between the Gondal District, Gujarat State, India and the Vhembe District, Limpopo District, South Africa;
6. The said contacts have facilitated further contact between JAU and UNIVEN as well as between JAU and Madzivhandila Agricultural College (Vhembe District, Limpopo Province, South Africa) and between UNIVEN and Madzivhandila Agricultural College;
7. JAU, Madzivhandila Agricultural College and UNIVEN consider it desirable to collaborate closely in various fields in the future;

8. This Memorandum of Understanding falls within the general framework institutional contacts between JAU, Madzivhandila Agricultural College and UNIVEN;
9. Both JAU and the University of Venda recognise that the challenges for agricultural development in Africa require concerted and thoroughly planned efforts to exploit the opportunities for scientific and technological revolution in agricultural sciences, which must be implemented to improve agricultural production on the continent.
10. Both JAU and the University of Venda have, in principle agreed to cooperate and work together in realizing the aforementioned goals and objectives

**NOW THEREFORE THE PARTIES WISH TO CO-OPERATE AS FOLLOWS:**

This MOU for "Collaboration" is written and agreed to between JAU and the University of Venda, based on several rounds of discussions held between the staff of these institutions, in order to identify potential areas of collaboration between the two institutions. The two parties will agree to arrange for the actual implementation of their collaboration through separate contracts under this umbrella memorandum.

**ARTICLE 1**  
**SCOPE OF THE MEMORANDUM OF UNDERSTANDING**

By this MOU, the collaborating institutions (JAU and the University of Venda) confirm their intent to contribute to the following:

- 1) To hold jointly organized meetings/workshops, as the case may be, on subjects of mutual interest;
- 2) To benchmark their teaching and learning methods;
- 3) To exchange staff and students;
- 4) To develop joint staff development programmes;
- 5) To undertake collaborative research, teaching and learning and community engagement and share the results;
- 6) To exchange information on food technology, agriculture and natural resources policy and where possible, facilitate collaborative access to relevant research and published materials;
- 7) To cooperate in the field of community engagement;

- 8) To identify priority areas for attention to increase agricultural productivity and trade and take necessary steps to improve this;
- 9) To identify priority areas for attention to increase access to Agricultural Tertiary Education in Vhembe District and take necessary steps to improve this;
- 10) Both parties aim to strengthen the human and institutional capacity that contribute to institutional innovation within the food, agriculture and natural resources sector
- 11) Both parties intend to cooperate with each other and as appropriate, with relevant national, regional, and international institutions operating within the region in the design, implementation and assessment of capacity development initiatives to achieve maximum impact on matters of common interest;
- 12) To work together to strengthen the understanding of regional and international trade agreements on agriculture, support the formulation of national trade agreements on agriculture, support the formulation of national and regional policies on agriculture and higher education, build shared information and communication systems and establish a database and promote advocacy on farmer issues and Agricultural education at tertiary institution level.

## **ARTICLE 2 COORDINATION**

UNIVEN and JAU will each designate a contact person for the purpose of coordinating the agreed activities of this Memorandum of Understanding.

## **ARTICLE 3 FUNDING AND DISBURSEMENT**

This Memorandum of Understanding represents the base on which the Parties solicit funds to support program activities. Financial transactions under this Memorandum of Understanding will be in accordance with the regulations of the respective institutions and/or in adherence to guidelines of third party donors.

## **ARTICLE 4 EQUIPMENT AND OTHER PROPERTY**

Equipment and other property obtained under this Memorandum of Understanding shall remain the property of the recipient institution.

## **ARTICLE 5**

### **PUBLICATION OF RESULTS AND INTELLECTUAL PROPERTY RIGHTS**

As far as possible, results from collaborative research and community engagement projects shall be published with due acknowledgement to persons involved at both institutions.

## **ARTICLE 6**

### **REPORTING**

UNIVEN and JAU shall keep each other informed about all matters of importance relevant to the Memorandum of Understanding.

## **ARTICLE 7**

### **AMENDMENT OF THE MEMORANDUM OF UNDERSTANDING**

1. This MOU may be amended by mutual consent of the Parties through an exchange of notes in a manner consistent with their mutual consent.
2. Addendums to this MOU may be agreed upon between the Parties at any time, during the consultative meetings and shall form an integral part of this MOU.

## **ARTICLE 8**

### **DISPUTE RESOLUTION**

The Contracting Parties agree to settle any dispute between them relating to the interpretation or implementation of this MOU amicably through negotiation and mutual consent.

## **ARTICLE 9**

### **TERMINATION OF THE MEMORANDUM OF UNDERSTANDING**

Any party desirous of terminating this Memorandum of Understanding shall give the other party thirty (30) days notice in writing through the appropriate channel to the other Party of its intention. Such termination will release all the parties of their obligations under this memorandum, provided that the parties will ensure that all projects in progress are, as far as possible, permitted to be completed in an orderly manner within an agreed period.

**ARTICLE 10  
NON ACTIONABLE**

The parties agree that this memorandum of understanding does not constitute a legally actionable document and any misunderstandings and breaches will be mutually resolved between the parties with no recourse to the law.

**ARTICLE 11  
ENTRY INTO FORCE AND DURATION**

1. This MOU shall enter into force on the date of its signature by the Parties hereto, and shall remain valid unless otherwise modified by mutual agreement of the Parties.
2. This MOU shall have the duration of 5 (five) years from the date of its commencement.

**IN WITNESS WHEREOF** the undersigned, being duly authorized have signed this MOU in two copies in the English language, and the two texts being equally authentic.

THIS DONE AND SIGNED AT Thohoyandou ON THIS THE 26 DAY OF November 2010.

WITNESSES : 1 [Signature]  
2 [Signature]

[Signature]  
Prof P A Mbat  
Vice Chancellor & Principal

THIS DONE AND SIGNED AT Junagadh ON THIS THE 10 DAY OF December 2010.

WITNESSES : 1 [Signature]  
2 [Signature]

[Signature]  
Dr NC Patel  
Vice Chancellor

Annex IV: MoU between the Indian Council of Agricultural Research, India and the Ethiopian Institute of Agricultural Research, Ethiopia 2011

MEMORANDUM OF UNDERSTANDING  
BETWEEN

THE INDIAN COUNCIL OF AGRICULTURAL RESEARCH (ICAR)  
NEW DELHI, INDIA  
AND

THE ETHIOPIAN INSTITUTE OF AGRICULTURAL RESEARCH (EIAR)  
ADDIS ABABA, ETHIOPIA

FOR COOPERATION IN THE FIELD OF  
AGRICULTURAL RESEARCH AND EDUCATION

The Indian Council of Agricultural Research (ICAR) and the Ethiopian Institute of Agricultural Research (EIAR) hereinafter jointly referred to as “the Parties” and separately as “the Party”:

**Desirous** to further develop and strengthen the existing friendly relations between the two countries through development of technical cooperation in the field of agricultural research and education;

**Have agreed** as follows:

ARTICLE – 1

The Parties shall encourage and develop technical cooperation between the two countries in the agricultural sector based on mutual advantage and in accordance with their respective national laws.

ARTICLE – 2

The Competent Authorities responsible for the implementation of this Memorandum of Understanding (MoU) are the EIAR of the Federal Democratic Republic of Ethiopia and the ICAR of the Republic of India.

ARTICLE – 3

1. The priority areas of cooperation specified in Article-1 of this MoU, shall include:

- (a) Agricultural Research in Horticulture;
- (b) Crop Science;
- (c) Fisheries;
- (d) Animal Science;
- (e) Agricultural Extension;
- (f) Agricultural Education;

- (g) Agricultural Engineering; and
  - (h) Natural Resource Management such as soil, water and Forestry.
2. Among other crops sugarcane, sugar beet and cotton shall be given immediate attention and shall be given specific areas of collaboration.
  3. The specific collaborative research for development projects in sub-Article-2 of this Article, shall be primarily given to technology adaptation, germplasm exchange, crop improvement, focused and need based scientific staff exchange as well as short and long term trainings.

#### ARTICLE – 4

The Parties shall collaborate in the areas of cooperation set forth in Article-3 through:

- a) Exchange of scientists and technologists on study visits, training and consultancies;
- b) Exchange of scholars, teachers, experts and students;
- c) Exchange of germplasm and breeding material as may be mutually agreed upon;
- d) Exchange of scientific literature, information and methodology;
- e) Exchange of scientific equipment as available and required in programme of common interest as may be mutually agreed upon; and
- f) Development and implementation of collaborative research projects, the areas and methodology to be as mutually agreed upon.

#### ARTICLE – 5

1. This MoU shall be implemented through development of biennial Work Plans which shall be developed by the Parties.
2. The work plans shall describe specifically the activities to be carried out under this cooperative programme and set forth the intended contributions of each Party.
3. The Work Plans, which may originate from either party shall be approved by both the Parties before implementation.

#### ARTICLE – 6

1. Research findings covered under this MoU shall be published upon mutual agreement between the Parties.
2. The publication(s) may be done jointly or separately as determined in each specific case, except in the case of annual reports. In the event of failures to agree on the method of publication, either Party shall be entitled to publish the findings separately after submitting the proposed manuscript(s) to the other Party and considering any comments and suggestions that may be offered by the latter.
3. All patentable/protectable intellectual property shall be managed on mutually agreed terms of the respective national laws.

*Handwritten signatures and initials:*  
A → meo  
H. H. H.

#### ARTICLE – 7

In the collaborative projects taken up as per this MoU, when a research result generates an intellectual property, the Parties shall mutually agree upon the system of protection of the intellectual property rights and other related rights.

#### ARTICLE – 8

- I. All information and data made available to the Parties, for the purpose of this MoU shall be kept confidential and shall not be disclosed to third parties without the prior consent of other Party.
- II. The aforementioned confidentiality shall not apply to any disclosure to:
  - (a) Employees of either Party for the purpose of performance of the MoU;
  - (b) Legal or corresponding act of either Party; and
  - (c) Solicitors, advocates, lawyers or other professional advisors under general duty of confidentiality.

#### ARTICLE – 9

The cost to be incurred in the implementation of this MoU shall be covered as follows:

1. Each Party shall be responsible for developing funds to support its involvement in the cooperative activities contemplated under this MoU, and all such activities will be dependent upon the budgetary appropriations of the Parties.
2. Subject to prior approval of the receiving institution, international travel expenses, per diems and medical insurance of scientists/experts on short term exchange visits shall be borne by the sending Party while accommodation and internal transport shall be covered by the receiving Party.

#### ARTICLE – 10

1. The Parties agree to encourage and promote the creation of institutional linkages between their recognized educational institutions, technical and vocational agricultural institutes and agricultural institutes of higher learning to further develop bilateral programmes and agricultural researches.
2. The Ethiopian Sugar Corporation and the Indian Sugar Research/Counterpart Institution shall create a linkage to achieve fruitful measures in the research and development of sugarcane and Sugar beet production.

*Handwritten signature*

*Handwritten signature*

### ARTICLE -- 11

1. This MoU may be amended, by mutual consent of the Parties upon a written request by either Party and through signing of an amendment agreement(s).
2. Any amendment(s) made in this MoU pursuant to the foregoing sub-Article shall enter into force in accordance with Article-13 sub-Article 1 of this MoU and forms an integral part of it.

### ARTICLE – 12

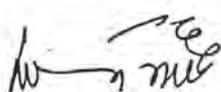
Any dispute that may arise regarding the application and/or interpretation of this MoU shall be settled by consultation through diplomatic channels.

### ARTICLE – 13

1. This MoU shall be effective from the date of its signature and shall remain in force for a period of five (5) years. and shall automatically be renewed for successive terms of five (5) years, unless either Party terminates it by giving the other Party six (6) months' prior written notice.
2. The provisions of this Agreement shall continue to subsist after its expiry to all commercial transactions concluded during the period of its validity but not fully executed at the date of its termination.
3. The termination of this Memorandum of Understanding shall not affect the validity or duration of specific collaborative programmes undertaken during the period of its validity but not fully executed at the date of its termination unless mutually agreed by the Parties.

**IN WITNESS, whereof**, the two Parties hereunto have signed at **Addis Ababa**, on this **Twelfth day of December 2011**, in two originals each in English and Hindi languages, both texts being equally authentic. However, in the event of any doubts arising, the English text shall prevail.

For and on behalf of the Indian Council of  
Agricultural Research (ICAR)



(Rajiv Mehrishi)

Additional Secretary, Department of  
Agricultural Research & Education and  
Secretary, Indian Council of Agricultural  
Research

For and on behalf of the Ethiopian Institute of  
Agricultural Research (EIAR)



( Dr. Solomon Assefa )

**Director General**, Director General,  
Ethiopian Institute of Agricultural Research.



**MEMORANDUM OF UNDERSTANDING BETWEEN TAMILNADU  
AGRICULTURAL UNIVERSITY AND EMBASSY OF MALI**

for facilitating

**TRANSFER AND DISSEMINATION OF INNOVATIVE FARMING  
TECHNOLOGIES, INPUTS AND CAPACITY BUILDING**

This Memorandum of Understanding ("MOU") is signed on 11<sup>th</sup> day of the month of March of the year 2011 (11.03.2011)

**BETWEEN**

TAMILNADU AGRICULTURAL UNIVERSITY a statutory university, established under, The Tamilnadu Agricultural University Act, 1971 (Act No.8 of 1971) by the legislature of TAMILNADU, having its headquarters at Coimbatore (hereinafter referred to as "TNAU" which expression shall unless repugnant to the context includes its successors and permitted assigns) of the first part

**AND**

EMBASSY OF THE REPUBLIC OF MALI, which expression shall mention of the Second Part

(Herein after "TNAU" and "Embassy of Mali" shall be individually referred to as "Party" and collectively as "Parties")

**WHEREAS:**

1. TNAU has expertise and infrastructure in the area of teaching, research & extension in the fields of agriculture, agri business management, agricultural engineering, horticulture, olericulture, floriculture, pomology, animal husbandry, fishery science, home science & basic sciences and been in the forefront of training manpower in above areas with under graduate, post graduate and doctoral programs is engaged in the pursuit of developing agri solutions that suits Indian agriculture. The technologies evolved by TNAU are useful to farming community and it has to reach the farmers effectively through industry institutional linkage.



2. Republic of Mali since 1960, situated in West Africa is basically agricultural country with 73% of the working population as small farmers engaged in subsistence farming accounting 44% of the Gross Domestic Product (GDP) with millet, rice, sorghum, and corn as the main food crop and peanuts, cotton and sugarcane for export. Productivity levels depend almost entirely on changes in climate and on floods of rivers, Niger and Senegal with tributaries. The country possessing the natural resources is lacking in the agricultural productivity for want of suitable agricultural production technologies and quality inputs.
3. The Republic of Mali since 1960, desires to get the technical and technological support for increasing the agricultural productivity and also the standard of living of the farming community.
4. The Embassy of Mali also desires to organize such education in the science and technology to improve their research and teaching capabilities.

**Memorandum of Understanding details the broad understanding between the Parties as follows**

**TNAU will facilitate towards the increase of agricultural productivity through transfer of innovative farming technologies and supplying quality inputs besides improving the education to sustain the agricultural research and education in long run**

1. TNAU will support Republic of Mali to improve agricultural productivity by means of latest technologies developed by Tamil Nadu Agricultural University as the cropping systems and agro climatic conditions are almost similar.
2. TNAU will convene interaction meetings with the officials involved in Agriculture at Republic of Mali as a first step to understand the requirements of the country.
3. TNAU will identify a team of experts to visit the Republic of Mali to explore the possibility of improving the agriculture by effective implementation of varieties and technologies developed by TNAU which are suitable for Republic of Mali.
4. TNAU will facilitate only technically without any financial commitment arising for both the parties.



**Republic of Mali will receive all the technical support from Tamil Nadu Agricultural University and cooperate for implementation of the plan**

1. The Embassy of the Republic of Mali will organize for the visit of the officials of the both parties and provide all the security and necessary arrangements to and through visit required for the basic details on the agriculture for developing productive agricultural plan for the country.
2. The Embassy of the Republic of Mali will look after all the formalities related to government policies for receiving the technical and material support from TNAU.

**Terms & Conditions**

1. The Parties may nominate their respective members to act as nodal officers of cooperation between two Parties to ensure proper and effective implementation of this MOU.
2. Nothing in this MOU shall be deemed to constitute a partnership between the Parties or constitute either Party the agent of the other for any purpose.

Signed on 11<sup>th</sup> day of the month of **March** in the year **2011** by the authorized representative(s) of the Parties under their hand and seal

**Registrar** (M. PARAMATHMA)  
Tamil Nadu Agricultural University  
Coimbatore, India

**H.E. QUSMANE TANDIA**  
Ambassador of the Republic of Mali  
New Delhi

**WITNESSES**

1.

(P. MURUGESHA BOOPATHI)

1. Anand Kumar R. Sivas  
Diplomat - House of Madagascar in India



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.



**UKaid**

from the British people