



CGIAR SITE INTEGRATION PLAN for INDIA

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A. Introduction

- Agriculture is a significant source of livelihood for the Indian population – it contributes ~15% of the GDP and about 50% of the workforce.
- This contribution of Indian agriculture has been made possible by an exceptionally strong National Innovation System that includes the Indian Council of Agricultural Research (ICAR), National and State science agencies and universities, a large NGO sector and a growing private sector.
- Agricultural research in India has also contributed to and benefited from excellent international collaborations.
- The CGIAR has a long presence and history of collaboration in India, with ICRISAT headquartered in Hyderabad, Telangana State and most of the CGIAR Centers and CRPs having Regional Centers and staff based in India (Figure 1, Appendix A).
- Climate Change poses many challenges for agriculture and there's a need for a systems approach to sustainable production in the country and better natural resource management.

“To devise plans for assessing impact, the CRPs will consult with representatives of partners and beneficiary groups in key countries where they aim to deliver outcomes at scale, including governments, NGOs, farmer organizations, processors and others along the value chain, and, ultimately, consumers. The CRPs will also coordinate with each other to ensure that, in key geographies, their activities are aligned for maximum impact. The CRPs’ collective, coordinated commitments in these geographies will be summarized in site integration plans to enable transparent interaction with local stakeholders. The consultation process will be pursued through the GCARD.”

B.1 Alignment with national and regional strategic plans

Paragraph on India national policy on agriculture; ICAR Strategic Plan. Agricultural programs delivered through States.

Alignment of CGIAR activities in India with Government priorities is currently coordinated via an annual ICAR-CGIAR meeting held in January each year. At this meeting the CGIAR report on current activities and plans and ICAR provides written feedback. Alongside this existing and well-functioning coordinating mechanism, ICAR provides triennial funding to CGIAR Centers as part of their contribution to the CGIAR. This funding supports collaborative projects that are mutually agreed and delivered.

Given the existing close collaboration between CGIAR, ICAR and partners, the focus for integration in India needs to concentrate more on increased efficiencies and effectiveness of the CGIAR in its operations and resource deployment.

B.2. Mechanism of coordination among CGIAR

A formal Steering Committee (SC) has been formed consisting of representatives from all CGIAR Centers who operate in India. Membership can also include specific representation from CRPs, for example CCAFS is an active member of the SC. Given that all Centers share a facility in the National Agricultural Science Complex (NASC), New Delhi, formal meetings of the SC can be held efficiently and regularly. The proposal is for ongoing SC meetings to be held (3 per year).

Suggestion to be considered include publishing a joint CGIAR newsletter and establishing a ‘CG in India’ Facebook presence. Other activities that can promote coordination among CGIAR and CRPs include:

- Joint research and capacity building proposals building on collaborative strengths;
- Annual workshops and conferences across CRPs;
- Sharing database and tools; and
- Joint publication in multidisciplinary and cross-cutting themes.

B.3. Opportunities for collaborative research agendas

The substantial CGIAR research portfolio in India, with over 350 funded research projects (Appendix A), indicates the critical contribution that impacts in India can deliver to the SRF. If there is an emphasis on achieving at scale, with large numbers of beneficiaries, then India must be a global priority. A case in point is the A4NH CRP target of improving the status of 89 million malnourished women, out of whom 82 million are in India. Indeed, given the level of CGIAR contribution, one must question why India is regarded as a Tier 2 country in regard to site integration?

Undertaking large-scale uptake of science-backed technologies to achieve major impact in reducing poverty, hunger, malnutrition and environmental degradation in India is a significant for collaborative R4D in India. For example, the Bhoochetana project in Karnataka and the Rythu Kosam Andhra Pradesh Primary Sector Mission, both led by the ICRISAT Development Center, have called upon the capabilities of sister Centers in delivering challenging agendas.

The projects specified in Appendix A demonstrate that a level of integration across the CGIAR does operate today. However, more can be done. Priorities for better research alignment include adopting a systems approach, preparing joint policy briefs, developing site integration plans at the level of each State and producing joint communication outputs. These opportunities can be solidified through the SC and via the operationalization of CRP activities in India.

B.4. Enhanced efficiencies of operation of CGIAR entities within country.

India hosts a number of significant CGIAR facilities, the ICRISAT Headquarters and research farm at Patancheru, the three BISA-CIMMYT (Ludhiana, Punjab, Jabalpur, Madhya Pradesh; and Samastipur, Bihar) and the ICARDA (Amlaha, Madhya Pradesh) research stations, and the CISA hubs (xxx). ICRISAT already hosts other CGIAR Centers (IRRI, IWMI, ILRI, CIMMYT), AVRDC and ICAR Institutes and State Agricultural Universities on its research farm. Each of these CGIAR facilities are available for use by any Center, CRP or collaborator for research purposes.

C. Expected Outcomes

Conclusions from the Country Consultation produced a collective set of aspirations:

- A call to action for integration through convergence of the CGIAR and national research systems to improve the productivity, profitability and sustainability of Indian agriculture.
- Identify national and state level priorities so the CGIAR Strategic Results Framework (SRF) can align with those priorities.
- Develop more efficient ways to work together in a time-bound manner by defining our roles and responsibilities clearly.
- Establish a sustained mechanism for collaboration amongst CGIAR Centers, CRPs and partners at the national and sub-national levels.
- Define priorities for ways to break the yield barrier of pulses and oilseeds, use big data and genomics for crop improvement and adopt new technology to improve fertilizer or nitrogen use efficiency as well as water use efficiency.
- Improve soil organic matter which is declining especially in rice and wheat systems and scale up conservation agriculture which has been promoted for a long time but is not being adopted on a large scale.
- Avoid duplication of work by using the site integration process as a framework and vehicle to foster greater collaboration.
- Apply new tools and technology to unlock the potential of under-utilized gene banks through pre-breeding and to scale up improved pulse varieties through modernizing the seed system.
- Define ways and means for assessing the impact of technologies, especially NRM technologies, in order to justify investments in agricultural research.

- Scaling-up and scaling-out of climate smart agriculture in collaboration with national, sub-national and local government and non-government partners to promote climate change adaptation and building resilient food systems.
- Commitment to an ongoing dialogue and engagement with partners and stakeholders to understand and align with the national priorities and actions and to establish and maintain partnerships.
- A commitment to producing joint research outputs and public goods including knowledge, technologies, tools, methods, evidence, processes and platforms.
- Initial plans to make use of a common set of research sites, facilities, infrastructure and equipment to achieve greater delivery of innovation and scaling up of research in India.

While each CGIAR Center is closely involved with their own partners in India, this was the first Country Consultation in India of all CGIAR Centers and CRPs. With collective support, this process needs to continue.

D. Strategic Interventions for realizing the outcomes.

Through the Country Consultation held in April 2016, a range of interventions were proposed for greater CGIAR collaboration and action. ICAR nominated:

- Breaking the yield barrier in pulses.
- Strengthening pre-breeding research.
- Using big data and genomics for crop improvement, especially in the dryland areas.
- Improving water and land productivity.
- Developing heat tolerant varieties for the Gangetic plains, taking into consideration the national program on conservation agriculture, and in convergence between the Government of India and the State Governments.
- Promoting animal health initiatives, especially the sexing of semen.
- Defining ways and means for assessing the impact of technologies, especially natural resource management technologies, in order to justify investments in agricultural research.
- Accessing germplasm lines from China.
- Identification, prioritization, evaluation and development of portfolios of climate smart interventions (combination of technologies, practices and services) for different crop/cropping systems across agro-ecological zones.
- Promoting research on youth, gender and social inclusions.

In reality, a strategy for India cannot be regarded nationally but must be considered at the level of States. The northern States of J&K, HP, Punjab, Uttar Pradesh and Haryana constitute the food bowl of the country but are plagued by present day agricultural problems which can render farming in these states unprofitable. Here research priorities are identified as:

- Emphasis on promotion of indigenous livestock, especially cattle and buffalo.
- Improving digestibility of fodder and crop residues.
- Improving integrated water and nutrient use efficiency.
- Breeding suitable varieties for conservation agriculture.
- Effective residue management.
- Multi-stress tolerance in crop varieties with emphasis on biotic stresses, salinity, lodging and waterlogging tolerance.

- Natural resource degradation, especially soil/water health issues such as increasing salinity in ground water, poor quality water use for irrigation.
- Community based climate change adaptation programs such as Climate Smart Village (CCAFS), Seeds4Needs.

The central and western states of Uttar Pradesh, Rajasthan, Madhya Pradesh, Chhattisgarh, Maharashtra and Gujarat produce a range of agricultural enterprises (maize, wheat, pearl millet, soybean, sugarcane, cotton, chickpea, rice, pulses, oilseeds, fruit and fodder-based agroforestry, livestock). Their indicated priorities included:

- Degradation of soil and landscape.
- Water management to reduce water stress / water logging in cropping systems.
- Feed and fodder shortages.
- Utilization of rice fallows.
- Improving dryland cultivation and systems.
- Climate information based value added agro-advisories with better tailoring of ICT services and weather index based agriculture insurance.

The southern States of Andhra Pradesh, Telangana, Karnataka, Tamil Nadu, Kerala and Goa identified priorities of:

- Addressing biotic stresses, especially blast, BLB, stem borer and plant hoppers.
- Abiotic drought and salinity, lodging tolerance, nutrition.
- Double digit growth in agriculture and allied sectors.
- Labour constraint and farm mechanization.
- Development of fallow lands, especially in coastal regions.
- Climate information based value added agro-advisories with better tailoring of ICT services and weather index based agriculture insurance.

The eastern States of West Bengal, Bihar, Orissa, Jharkhand, Arunachal Pradesh, Meghalaya, Tripura, Manipur, Sikkim and Nagaland suggested priorities of:

- Water Management for drought, flood and submergence.
- Labour availability, low wages and migration
- Pulses, Oil-crops, horticulture, livestock and vegetables
- Infrastructure, mechanization, seed systems, extension.
- Climate information based value added agro-advisories with better tailoring of ICT services and weather index based agriculture insurance.

E. Responsibilities

To be determined.

F. Governance:

A Steering Committee chaired by the ICRISAT Director General will oversee the site integration process in India.

G. Budgets:

To be determined

Table 1: India Site Integration Plan Overview

<i>COUNTRY</i>		
	Current	Planned (by end 2016)
Lead Center	ICRISAT	
Participating CRPs, Centers	See Appendix A	
Intra-CG coordination team	<p>Bergvinson, David (ICRISAT-IN) <D.Bergvinson@cgiar.org>; Carberry, Peter <p.carberry@cgiar.org>; 'GN Kumar' <GN.Kumar@cgiar.org>; Pal, Arun (ICRISAT-IN) <A.Pal@cgiar.org>; Aruna, V (ICRISAT-IN) <v.aruna@CGIAR.ORG>; Dhulipala, Ram (ICRISAT-IN) <R.Dhulipala@cgiar.org>; Ray, Tinku (ICRISAT-IN) <T.Ray@cgiar.org>Adhya, Partha (ICARDA-New Delhi) <P.Adhya@cgiar.org>; AGGARWAL, Pramod (CIMMYT-India) <P.K.Aggarwal@cgiar.org>; Amerasinghe, Priyanie (IWMI-Delhi, India) <P.Amerasinghe@cgiar.org>; Campilan, Dindo (CIAT-Vietnam) <D.Campilan@CGIAR.ORG>; Chadag, Vishnumurthy Mohan (WorldFish) <V.Chadag@cgiar.org>; Choudhary, Rajendra (ICRAF) <R.Choudhary@cgiar.org>; E.Duveiller@cgiar.org; 'G.Ramasamy@cabi.org'; GUPTA, Hari Shanker (CIMMYT-India) <H.S.GUPTA@cgiar.org>; JAT, Mangi Lal (CIMMYT-India) <M.Jat@cgiar.org>; Jha, Alok (ILRI) <A.Jha@cgiar.org>; Joshi, Pramod (IFPRI-New Delhi) <p.joshi@cgiar.org>; Jurgen Kroschel <j.kroschel@cgiar.org>; Kadian, Mohinder (CIP-SWCA) <m.kadian@CGIAR.ORG>; Attaluri, Sreekanth (CIP-SWCA) <s.attaluri@cgiar.org>; Kantharaj, Madan (Bioversity-India) <t.madan@cgiar.org>; 'Marthi, Vijaya Kumar (IRRI) <v.k.marthi@irri.org>; Noor, Jamal Pervez (ICRAF) <J.P.Noor@cgiar.org>; Parr, Julian (CIP-SWCA) <J.Parr@cgiar.org>; Prem, Mathur (Bioversity-India) <p.mathur@cgiar.org>; Raj, Barun (CIP-SWCA) <Barun.Raj@cgiar.org>; Rizvi, Javed (ICRAF) <J.Rizvi@cgiar.org>;</p>	Reduce to a smaller Steering Committee of ~10

	Robles, Miguel (IFPRI) <M.Robles@cgiar.org>; s.wani@cgiar.org; Sarker, Achintya Kumar (WorldFish) <A.K.Sarker@cgiar.org>; Sarker, Ashutosh (ICARDA) <A.SARKER@CGIAR.ORG>; 'Srbani.roy@cgiar.org'; Umesh Singh <u.singh@cgiar.org>; VIVEK, Bindiganavile Sampath (CIMMYT-India) <B.VIVEK@CGIAR.ORG>; YADAV, Ashwani (CIMMYT-India) <ASHWANI.YADAV@cgiar.org>	
National-CGIAR working group	Annual ICAR-CGIAR Review & Planning meeting (each January)	
All Stakeholder forum	Country Consultation held 22 March 2016	Possible annual event
National stakeholders engaged		
Government	DARE, ICAR, SAUs	
Other stakeholders	See Appendix A	
Budget (Resources)		
2016 CGIAR	ICRISAT underwrote the 2016 Country Consultation meeting. Each Center funded their invitees to the meeting. All Centers / CRPs maintain a Country Office in New Delhi and so SC meetings are low cost, except for ICRISAT who have to fly in from Hyderabad.	To be determined
2016 National partners	ICAR provides funding support and in-kind collaboration for most Centers operating in India. These funds can support CGIAR integration.	CRPs funded in India may provide resourcing for integration processes in India.
2017 CGIAR	To be determined	To be determined
2017 national partners	Expected to be largely drawn from the extensive list in Appendix A	To be determined

Appendix 1: Current CGIAR/CRP work in India

CG Center	Project Name	Donor	CRP & Centers	Other collaborators	Target States	Target systems	Key deliverables	Duration
CCAFS	Enhancing the benefits of Remote Sensing Data and Flood Hazard Modeling in Index-based Flood Insurance (IBFI) for the marginalized smallholder communities in South Asia	CCAFS and Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan	IWMI and IFPRI	Bihar State Disaster Management Authority (BSDMA), Indian Institute of Water Management (IIWM-ICAR)*, BajajAllianz, Agriculture Insurance Corporation of India (AIC), SwissRe, Indian Institute of Technology, Gandhi Nagar, eeMausam, Apex Spatial	Bihar State covering districts in Muzaffarpur and Darbhanga	Climate Risk Management	1. Digital flood mapping tool to monitor and quantify the impact of floods on crops, and its application in insurance schemes. 2. Design and pilot test a set of farmer-friendly flood insurance contracts for at least three districts with a considerable number of marginalized female farmers/poor people to ensure contracts are not gender biased. 3. Policy and institutional guidelines translated into business models for the implementation of flood insurance product. 4. Comparative analysis of the cost-effectiveness of RS-based index insurance compared to traditional methods, and estimating the potential in other parts of the target countries.	2015 - 2018
CCAFS	Piloting and upscaling an innovative underground approach for mitigating urban floods and improving rural water security in South Asia	CCAFS	IWMI and IFPRI	CSSRI, 3R/Acacia Water, LNRMI, TERI	India (UP)	Flood mitigation	1. Technical guidelines / Business models on UTFI; 2. Operational Plan for intermediate upscaling of UTFI; 3. Report detailing preliminary analysis of UTFI piloting in India; 4. Pilot trial results in India and Bangladesh	2015-2018

CCAFS	Developing, adapting and targeting portfolios of CSA practices for sustainable intensification of smallholder and vulnerable farming systems in South Asia	CCAFS	CIMMYT, ICRISAT, ILRI, IRRI	ICAR	India (Punjab, Haryana, Bihar, Andhra Pradesh, Odisha, Karnataka)	Climate-Smart Agriculture/Climate-Smart Villages in rice-wheat-maize system	1. Developed robust gender-responsive framework for targeting and implementing CSAPs within CSVs for increased adoption; 2. Database and evidences for the adaptive capacity and environmental footprint of multi-commodity CSAPs within CSV pilots; 3. Participatory validation of farming system typologies within CSVs, and potential effects of CSAPs in diverse typologies; 4. Impact narratives, policy briefs & enhanced capacity of stakeholders on integrated approaches & tools for adoption of CSAPs	2015-2018
CCAFS	Climate-informed, ICT-based agro-advisory service for major food crops in South and Southeast Asia	CCAFS	IRRI, CIMMYT	BAU, OUAT, DAE	India (Bihar, Odisha)	ICT	1. Initial version of climate-informed agro-advisory services at target location in India; 2. Endorsement of agro-advisory service for dissemination at site in South Asia; 3. Manual on how to develop and roll out a climate-informed agro-advisory service	2015-2018
CCAFS	Recommendation domains, incentives and institutions for equitable local adaptation planning at sub-national level and scaling-up CSAPs in wheat & maize systems	CCAFS	CIMMYT, IFPRI, ICRISAT, IWMI	ICAR, WUR	India (Bihar, Haryana, Karnataka, Odisha)	Climate-Smart Agriculture/Climate-Smart Villages	1. Develop criteria and business assessment tool to identify and evaluate business opportunities/barriers from CSA perspective; 2. Synthesis report of local level incentives & policies supporting CSA for all CSV sites in India; 3. Validation results of prioritized strategic entry points for linkages of LAPA and CSVs	2015-2018

CCAFS	Participatory Evaluation of Climate-Smart Agriculture (CSA) in Different Agro-Ecological Zones of South Asia	CCAFS	CIMMYT, WordFish, ICRISAT	ICAR	India (Haryana, Bihar, Karnataka, Odisha),	Climate-Smart Agriculture/Climate-Smart Villages	1. Barriers to CSV adoption and strategies to overcome them at national/sub-national levels; 2. Evidences for viability of climate-smart interventions in major crops and cropping systems; 3. Institutional and business models of climate smart village implementation in different agro-ecological zones	2015-2018
CCAFS	Scaling up Climate-Smart Agriculture (CSA) Practices and Technologies Across South Asia	CCAFS	IFPRI, CIMMYT	eeMausam, ICAR, AIC, BAIF,	India	Decision Support Systems	1. ICT tool for disseminating climate services and agro-advisories; 2. National/state adaptation plans for agriculture for one-two states of India, Nepal and Bangladesh; 3. Improved weather indices for key crops disaggregated by region	2015-2018
CCAFS	Outscaling a citizen science approach to test climate adaptation options on farms	CCAFS	Bioversity	ICAR , PPV&FRA, GC, HPPI, NBPGR, IARI	India	Climate-Smart Agriculture	1. Training course in Citizen Science for CSA; 2. Learning on design of crowdsourcing experiments -- out scaling model; 3. Establishment of global or regional consortium/platform for Citizen Science for CSA	2015-2018
CCAFS	Enhancing farmers' adaptive capacity by developing Climate-Smart Insurance for weather risk	CCAFS	IFPRI	CYMMIT" and "George Washington University – Department of Geography"	India	Insurance	1. Field experiments on bundling index insurance with climate-smart agriculture; 2. Climate-smart insurance: Evidence based on theory, calibrations and experiments; 3. Capacity on offering climate-smart insurance	2015-2018

CCAFS	Scaling-up climate smart agriculture through policies and institutions: linking it with national agenda of food security	CCAFS	CCAFS, BISA, CIMMYT, IWMI	BAIF, CUTS, ICAR, Center for Good Governance (CGG)	India (Haryana, Maharashtra, Madhya Pradesh, Bihar),	Climate-Smart Agriculture	1. Policies/programs/schemes on Climate Smart Agriculture(CSA) for sharing with concerned government departments, donors and other stakeholders; 2. Communication products such as policy brief, material for print and electronic media; 3. Guidelines for implementing policies and programs to orient key stakeholders; 4. Input-output data of various CS interventions, resource availability in sub-regional/local level; 5. Decision support system for optimizing the production systems spatially and temporally	2015-2018
CIMMYT	Sustainable Intensification of rice/maize-wheat cropping system	Funded by BISA	Yet to be integrated	CIMMYT	Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Maharashtra, Bihar, Bengal and Odisha	Rice-wheat, maize-wheat and cotton-wheat cropping systems	Technology for increasing cropping intensity by adjusting an extra crop	5 years
CIMMYT	Increasing input use efficiency	Funded by BISA	Likely to be part of CRP on Rice	CIMMYT	Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, Maharashtra, Bihar, Bengal and Odisha	All agricultural production system	Technology for efficient use of water and nutrients	5 years

CIMMYT	AAA Phase II	SFSA	MAIZE, CIMMYT	ICAR-AICRP, SAUs in India (Bihar Agriculture University, Sabour; University of Agricultural Sciences, Dharwad; University of Agricultural Sciences, Bangalore; Rajendra Agriculture University, Pusa; University of Agricultural and Horticultural Sciences, Shivamogga), private sector, State Seed Corporations	India (Orissa, Bihar, Karnataka, AP, Telangana, Maharashtra, Rajasthan, MP, Gujarat),	Rain-fed and stress prone maize growing systems of South and South East Asia	Germplasm improved for biotic and abiotic stresses and nutritional quality, Training, Network of researchers and seed partners	Mid 2016 onwards
CIMMYT	ICAR - QPM	ICAR	MAIZE , CIMMYT	IIMR ; AICRP	AICRP	Maize based systems	Develop QPM lines and hybrids with high protein quality and disease resistance.	5 years on-going
CIMMYT	IMIC Phase II	Members	MAIZE, CIMMYT	Seed partners from the private sector, ICAR-AICRP	India (Orissa, Bihar, Karnataka, AP, Telangana, Maharashtra, Rajasthan, MP, Gujarat), Thailand, Pakistan, Nepal, Indonesia, Vietnam, Sri Lanka	Rain-fed and stress prone maize growing systems of South and South East Asia	Germplasm with wide genetic diversity and improved for biotic and abiotic stresses, network of seed partners	Mid 2016 onwards

CIMMYT	Heat Tolerant Maize for Asia (HTMA)	USAID, DC, USA	MAIZE/CIMMYT	Bihar Agriculture University (BAU), Sabor, India; University of Agricultural Sciences (UAS), Raichur, India; Pioneer Hi-bred, India; Kaveri Seed Company Ltd., Hyderabad, India; Ajeet Seeds Ltd., Aurangabad, India	A.P., Telangana, Karnataka, Punjab, Eastern U.P.	Maize-based system	Heat tolerant hybrids for spring cultivation	1 Oct, 2012 to 30 Sep, 2017
CIMMYT	Climate resilient maize for Asia (CRMA)	GIZ/BMZ, Germany	MAIZE/CIMMYT	Indian Institute of Maize Research (IIMR), New Delhi, India; Anand Agricultural University (AAU), Anand, India; Banaras Hindu University (BHU), Varanasi, India; Tata Trust (SRTT), India; Bioseed Asia Pvt. Ltd., India; Bisco Biosciences; Ajeet Seeds, India; Rasi Seeds Pvt. Ltd. India; Indo-American Hybrid Seeds India.	North and Eastern India	Maize-based system	Water stress resilient maize for Kharif season cultivation	1 Jan, 2016 to 31 Dec, 2018
CIMMYT	CRP (Maize): Molecular	MAIZE	CIMMYT	AICMIP	Karnataka		Maize lines with resistance to Turcicum leaf blight and downy mildew	2012-2016

	breeding for prioritized disease traits in South and SE Asia				<p>Telangana, Andhra Pradesh Rajasthan</p> <p>Uttarakhand</p> <p>Kashmir</p> <p>Himachal Pradesh</p> <p>Punjab</p>	<p>Maize-based system</p>	<p>Maize lines with resistance to Turcicum leaf blight and Post flowering stalk rot</p> <p>Maize lines with resistance to downy mildew, bacterial leaf and sheath blight and Post flowering stalk rot</p> <p>Maize lines with resistance to Turcicum leaf blight and bacterial leaf and sheath blight</p> <p>Maize lines with resistance to Turcicum leaf blight</p> <p>Maize lines with resistance to downy mildew and bacterial leaf and sheath blight</p> <p>Maize lines with resistance to bacterial leaf and sheath blight and Post flowering stalk rot</p>	
CIMMYT	ICAR - Global Rust Initiative	ICAR	WHEAT , CIMMYT	IIWBR (Karnal) ; AICRP ; BGRI, Cornell Univesity, USA;	Punjab; UP, Bihar, Maharastra, WB, Haryana, MP, Uttarakand... (all states where wheat grows)	Wheat based Systems; Rice - Wheat ; Cotton- Wheat	Enhance wheat productivity in India and SAARC countries through improved germplasm, training and partnership building	5 years on-going

CIMMYT	Rapid Development of Climate Resilient Wheat Varieties for South Asia Rapid Development of Climate Resilient Wheat Varieties for South Asia Using Genomic Selection	USAID	WHEAT , CIMMYT	IIWBR (Karnal) ; AICRP BGRI, Cornell Univesity, USA;	Punjab ; Madhya Pradsesh ; Bihar (BISA sites)	Wheat based Systems ; Rice-Wheat	heat tolerant, high yielding, and farmer-accepted varieties for South Asia, while simultaneously increasing the research for development capacity of the global wheat improvement system	2013-2018
CIMMYT	Breeding for abiotic resistance in durum wheat	ICAR	WHEAT , CIMMYT	IIWBR (Karnal) ; AICRP UAS, Dharwad ; ARI, Pune; IARI Indore; IIWBR (Karnal)	Karnataka UAS; Maharashtra; Madhya Pradesh	Wheat based Systems ; Rice-Wheat	Development of abiotic stress tolerant durum wheat germplasm for the central & peninsular zones of India	5 years on-going
CIMMYT	Development of micronutrient-dense wheat varieties for improved human nutrition	Harvest Plus	WHEAT , CIMMYT, CIAT, IFPRI	IIWBR (Karnal); IARI, PAU, Ludhiana, BHU, Varanasi,	Punjab ; Haryana ; UP ; Delhi	Wheat based Systems ; Rice-Wheat	High Zn wheat lines with varied maturity types (early, medium and late) are in advanced stages of testing through special biofortification	2012-2016
CIMMYT	Developing, adapting and targeting portfolios of CSA practices for sustainable intensification of smallholder and vulnerable farming systems in South Asia	CGIAR-W1/2	CCAFS, CIMMYT, IRRI	ICAR, SAUs BARI, BRRI	Haryana, Punjab, Karnataka, Odisha, Bihar Bangladesh	rice-wheat, maize-wheat, rice-maize, rainfed cotton, legumes, rice-rice	Science-based, scalable evidences for climate smart agricultural practices (CSAPs) identified and implemented through Climate Smart Villages (CSVs) Framework for targeting large-scale adoption of CSAP portfolios by a diverse range of farm household types within CSVs of different agro-ecologies	4 years

CIMMYT	Recommendation domains, incentives and institutions for equitable local adaptation planning at sub-national level and scaling-up CSAPs in wheat & maize systems	CGIAR-W1/2	CCAFS, CIMMYT	ICAR, SAUs, WUR, BARI	Haryana, Punjab, Karnataka, Odisha, Bihar, Bangladesh	rice-wheat, maize-wheat, rice-maize, rainfed cotton, legumes, rice-rice	Developing and defining innovative business models and open innovation platforms for scaling Climate Smart Agriculture Practices (CSAPs) Synthesis report of local level incentives and policies supporting CSA for CSV sites in Bangladesh Strategic entry points identified for prioritization & synergies for co-investments in CSA interventions under CSVs in Bangladesh.	4 years
CIMMYT	Wheat Flagship project on Sustainable Intensification	CGIAR-W1/2	WHEAT, CIMMYT	ICAR, SAUs	Haryana, Punjab, Bihar	Rice-wheat, maize-wheat, cotton-wheat, wheat-legumes	Strategic research on precision input management in conservation agriculture based wheat system/sustainable intensification Capacity development, scaling and publications	4 years

CIMMYT	CSISA Phase III	BMGF	CIMMYT, IRRI, and IFPRI mapping against MAIZE, WHEAT, GRiSP, PIM	ICAR Natural Resources Management and Extension, SAU's, State Departments of Agriculture, private sector seed and input dealers, mechanized service provider and machinery companies, NGO's (e.g. Pradhan) and livelihoods initiatives (e.g. JEEViKA and women's SHG)	Bihar, Odisha, E. UP	Rice-wheat, pulse integration in cereal systems, maize in kharif, rabi, and spring seasons	1. Facilitating wide-spread adoption of SI technologies and management practices; 2. Mainstreaming innovation processes with national institutions; 3. Developing critical knowledge and research-based products to support SI scaling; 4. Identifying policy solutions to improve the enabling environment for SI scaling.	2015-2020
CIMMYT	CGIAR-GoK: Improving Rural Livelihoods through Innovative Scaling-up of Science-led Participatory Research for Development in Karnataka	Govt of Karnataka	MAIZE & CCAFS		Karnataka	Rainfed maize and crop-livestock mixed farming systems, rice-fallow, cotton systems	Participatory selection of high yielding maize hybrids through farmers evaluation and scaling up model for CA-based production systems Participatory evaluation of improved and stress tolerant maize cultivars at the pilot sites for local adaptation and scaling up Participatory evaluation/refinement of CA based management practices for maize systems and DSR at key pilot sites for their scaling up Capacity development of different stakeholders on improved maize farming and conservation agriculture based management practices	01-01-16 to 31-03-2017
							Extension agents, service providers and farmers	

							<p>Training of New generation researchers (Students)</p> <p>Design, development and participatory refinement of CA machinery suited to production systems through public-private partnerships and innovation centers</p> <p>Introduction and local adaptation of CA machinery relevant to farmers of target domains</p> <p>Design and development of CA machinery locally through capacity enhancement of local manufacturers</p>	
CIMMYT	ICAR-Conservation Agriculture	ICAR-GoI	WHEAT and CCAFS, CIMMYT	ICAR, SAUs	Haryana, Punjab, Bihar	rice-wheat, maize-wheat, rice-maize, cotton-wheat, legumes	<p>Strategic on-station and participatory research on conservation agriculture and CSA in cereal based systems in EIGP</p> <p>Local adaptation and scaling Sustainable Intensification and CSA in cereal systems in eastern IGP</p> <p>Strategic research on Sustainable Intensification of rice-wheat systems in western IGP</p> <p>Strategic research on precision water and nutrient management in CA based maize based systems</p> <p>Validation of scale appropriate CA machinery</p> <p>Capacity development of NARS scientists on Conservation agriculture</p>	5 years On going
CIMMYT	Sustainable and resilient farming systems intensification	ACIAR	CCAFS, CIMMYT, IRRI, IWMI	ICAR, BAU, UBKV, Govt of Bihar, Sakhi (NGO), Govt of WB,	Bihar, West Bengal	Maize, wheat, rice based farming systems	<p>Understand farmer circumstances with respect to cropping systems, natural and economic resources base livelihoods strategies, and capacity to bear risk and undertake technological innovations</p>	May 2014- June 2018; 50

	(SRFSI) for eastern gangetic plains						<p>Develop, with farmers more productive and sustainable technologies that are resilient to climate risks and profitable for smallholders</p> <p>Catalyse, support and evaluate institutional and policy changes that establish an enabling environment for the adoption of high-impact technologies</p> <p>Facilitate widespread adoption of sustainable, resilient and more profitable farming systems</p>	months
IFPRI	Partnerships in South Asia	CGIAR	CRP 2	CG Centres	South Asian Countries		<p>Special Session on Dynamics of Transforming Agriculture in Asia 23rd AERA Annual Conference.</p> <p>- "High Level Policy Dialogue on Investment in Agricultural Research for Development (AR4D) in the Asia-Pacific Region" organized by the Asia-Pacific Association of Agricultural Research Institutions (APAARI)</p>	1 year
IFPRI	Collaborative Research and Capacity Strengthening for Monitoring and Evaluation and Impact Assessment of IFAD projects in India	IFAD	CRP 2	Jharkhand Tribal Development Society (JTDS) Odisha Tribal Empowerment and Livelihoods Programme (OTELP)	Jharkhand, Odisha, Maharashtra, Uttar Pradesh and Assam		Training for baseline and Annual Outcome Survey in the Tribal regions	4 years

IFPRI	Priority setting / M & E	ICAR/GoI	CRP 2	National Institute of Agricultural Economics and Policy Research (NIAP) Council for Social Development (CSD)	Bihar, Uttar Pradesh and Madhya Pradesh		Training program of "Impact assessment of Agricultural Research in India". Training on "Value Chains, Agricultural Development, and Public Policy: Qualitative and Quantitative Approaches". Training program on " Methodologies in Agricultural Extension Research". Development of ICAR Vision 2050 Report.	1 year
IFPRI	Scaling up Science-led Participatory Research for Development in Karnataka	Govt. of Karnataka/ICRISAT	CRP 2	Asian Vegetable Research and Development Center (AVRDC), Government of Karnataka	Karnataka		Baseline report for Bhoochetns Plus Initiative in 4 districts of Karnataka	3 years
IFPRI	Cereal System Initiative for South Asia-Phase- II	BMGF/USAID			Bihar and Odisha			
IFPRI	Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India	BMGF	CRP 4	Institute of Development Studies Public Health Foundation of India Save the Children Public Health Resource Network Ministry of Women and Child Development (GoI)	Odisha, Madhya Pradesh, Karnataka, Uttar Pradesh, Maharashtra, Rajasthan		Provide evidence based guidance to support policy and program actions for Nutrition in India.	3 years

IFPRI	Prioritizing Interventions for Reducing Impact of Climate Change and Increasing Incomes of Smallholders in Indo-Gangetic Plain.	CCAFS	CRP 7	Consumer Unity and Trust Society BAIF Development Research Foundation	Punjab, Haryana, West Bengal, Bihar, Maharashtra and Madhya Pradesh		Input/Output data of various Climate Smart Interventions and Resource Availability in Sub-Regional and Local Labour. Decision support system for optimising the Production System especially and temporarily. Policies, Programs and Schemes on Climate Smart Agriculture for sharing with concerned Government Departments, Donors and Stakeholders	3 years
IFPRI	Sustainable and Resilient Farming Systems Intensification in the Eastern Gangetic Plains	ACIAR	CRP 7		Bihar and West Bengal			3 years
ILRI	Research on improving basal diets at source and through processing and supplementation in feed and fodder value chains			CIMMYT, ICRISAT, Miracles Feed, Narasingarao Dairy farm, Mallareddy Dairy farm, Urban & peri-urban fodder traders				Till Dec'15

ILRI	CRP 3.7 (Livestock and Fish) on 'employing value chain as an organizing principle for enhancing production and consumption of milk by the poor.		Window 1&2 of CRP	Bihar Rural Livelihoods Promotion Society (BRLPS); Center for Research on Innovation and Science Policy (CRISP); Inter Cooperation Social Development (ICSD); Kaushalya Foundation; Institute of Animal Health and Production (IAHP)				Till Dec'15
ILRI	ELKS project on 'strengthening livestock value chains in tribal hills through research support'	SRTT		SRTT, HIMMOTHAN, NEIDA, AHD-Nagaland, NRCP, NRCM, Pant Nagar University, AAU				2015-17
ILRI	GET Dairy project (CRP 4.3) on 'assessing health risk in informal milk value chain, pilot testing risk communication and risk management strategy and generating evidence for replication in Assam'		CRP 4.3	Dairy Development Deptt. A.H.& Vety. Deptt., Health Deptt., Guwahati Municipal Corporation, Assam Agricultural University				2014-15

ILRI	Peri-Milk project on 'promotion of health, livelihood and sustainable dairy system in different peri-urban settings in India'	IDRC		Public Health Foundation India, GADVASU, Assam Agricultural University, University of Agriculture Science-Bangalore				2014-17
ILRI	Brucellosis and reproductive health of dairy animals	USDA		Bihar Agricultural University, NIVEDI,				2015
ILRI	Bhoochetana (Improving Rural Livelihoods through Innovative Scaling-up of Science-led Participatory Research for Development in Karnataka)	Govt. of Karnataka		Govt. of Karnataka, ICRISAT, CIMMYT				Till 2017
ILRI	Superior dual purpose maize hybrids for more and better food and fodder -Ph II		CRP program on Dryland systems	CIMMYT, Fodder traders				Till 2017
ILRI	Superior dual purpose sorghum cultivars for South Asia		CRP program on Dryland cereals	ICRISAT, Janapriya dairy				Till 2017

WorldFish	Establishment of a satellite nucleus of the GIFT strain at Rajiv Gandhi Center for Aquaculture (RGCA), India	RGCA (MPEDA), Ministry of Commerce & Industry (Window 3)	Mapped to L&F CRP	CIFA (ICAR) Department of Fisheries Tamil Nadu	Tamil Nadu	Tilapia (Genetics)	Satellite nucleus of the GIFT strain in India	01-08-2011 To 31-07-2016
WorldFish	Collaboration with RGCA will continue under FISH CRP II for genetic improvement and dissemination of GIFT in India		Will be mapped to Fish CRP II	CIFA State Fisheries Departments	Andhra Pradesh, Tamil Nadu, Odisha	GIFT Tilapia dissemination program		2017-2022
WorldFish	Freshwater Prawn (<i>Macrobrachium rosenbergii</i>) genetic improvement program	ICAR (Window 3)	Mapped to L&F CRP	CIFA (ICAR)	Odisha	Freshwater Prawn (Genetics)	5 generations of selection completed	01-01-2007 to 31-12-2012
WorldFish	Collaboration with ICAR for 2 flagships under the FISH CRP II (2017-2022)	Exploring Window 3 collaboration opportunities with ICAR	CIFA & CIBA -Flagship 1 sustainable aquaculture ; CIFT – Flagship 3 Value chains and nutrition		Odisha, Tamil Nadu, Kerala			5 years

WorldFish	Supporting implementation of aquaculture policy in Odisha (2016-2020)	Exploring Window 3 collaboration from Government of Odisha	Will be mapped to FISH CRP II	CIFA, CIBA, MPEDA	Odisha			5 years
ICRISAT	Improving Post-rainy Sorghum Varieties to Meet the Growing Grain and Fodder Demand in India - Phase 2	ACIAR, Australia	Nil	Directorate of Sorghum Research (DSR), Hyderabad	Telangana, Karnataka, Maharashtra	Germplasm Enhancement & Breeding	Lines improved for Rabi sorghum area - knowledge of GxExM option to maximize grain and stover productivity/quality	08.01.2013 - 07.31.2017
ICRISAT	Innovative ICT mediated Extension and Delivery Platforms for Improving Productivity and Profitability of Smallholder Agriculture	ANGRAU, Telangana, India	Nil	Nil	Andhra Pradesh and Telangana	Info. Dissemination & Increasing productivity	-Advocate mobile mediated agricultural advisory services through Krishi Gyan Sagar and Krishi Vani applications. - Integrate KSICconnect application for enabling ANGRAU to monitor the KVK and DAATT activities.	2013 - 2016

ICRISAT	Improved Livelihoods through Integrated Water Resources Management in Community Watershed in Medak	Asian Paints Limited	Nil	Nil	Telangana	<ul style="list-style-type: none"> - Exemplar watersheds in command areas will be established as "Sites of Learning" for scaling up. - Sites for on-farm research to evaluate impact of integrated watershed management activities on livelihood improvement - Ex-situ water harvesting structures would harvest nearly 50,000-60,000 cubic meter surface water at each site and enhance groundwater availability along with addressing issues of drainage and flooding at pilot villages. - With increased water availability and other management, cropping intensity and yield would increase by 20-30 % and income by 50% in five years. - Soil salinity and water logging will be reduced. Increased rainwater harvesting in will also result in increase in groundwater quality. - Microenterprises for women will create additional source of income for the families as well as increased availability of inputs like vermicomposting as well as outputs like milk etc., in the village. Kick starting the business activity in the rural areas. - Long-term data on impacts of watershed management in terms of hydrology, crop production, incomes and social development will have available for further refinement and understanding IWMP impact. 	09.01.2014 - 08.31.2019
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ICRISAT	Tracking Change in Rural Poverty in Household and Village Economies in South Asia	Bill and Melinda Gates Foundation (BMGF), USA	CRP-PIM	ICAR-NIAP, New Delhi; ICAR-IIWM, Bhubaneswar; ICAR-RCER Patna	Andhra Pradesh, Bihar, Gujarat, Karnataka, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Telangana	Improving Policy, Strengthening NARS	- Household Panel Survey data, Meso (district/ state) level data, policy insights for analysis of data, capacity building through joint implementation of the project works, training	05.01.2009 - 09.30.2015
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ICRISAT	HOPE for Sorghum and Millets: Harnessing Opportunities for Productivity Enhancement (HOPE) of Sorghum and Millets	Bill and Melinda Gates Foundation (BMGF), USA	Nil	<p>1. Swami Keshwanand Rajasthan Agricultural University (RAU), Bikaner</p> <p>2. Junagadh Agricultural University, India (JAU), Gujarat</p> <p>3. Vasantrao Naik Marathwada Krishi Vidyapeeth (VNMKV), Maharashtra</p> <p>4. Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri</p> <p>5. Sardarkrushinagar Dantiwada Agricultural University (SDAU), Gujarat</p> <p>6. CCS Haryana Agricultural University (CCSHAU), Hisar</p> <p>7. Sri Karan Narendra Agriculture University (SKNAU), Jobner</p>	Maharashtra; Rajasthan; Gujarat; Haryana	Increasing productivity; Germplasm Enhancement & Breeding	<ul style="list-style-type: none"> - Targeting opportunities for technology development and delivery to maximize adoption and impacts of innovations on livelihoods in WCA, ESA and SA - Improve sorghum cultivars and management options to increase productivity in SA, ESA, and WCA - Improve pearl millet cultivars and management options to increase productivity in WCA and SA - Improve finger millet cultivars and management options to increase productivity and production in Eastern and Southern Africa (ESA) - Discover and develop strategies for improving markets for Sorghum, Pearl Millet and Finger millet to stimulate adoption of improved technologies by smallholder farmers in ESA, WCA, and SA -- Enable technology adoption of sorghum, pearl millet, and finger millet by improving access to seeds, markets, inputs, know-how and finance in ESA, WCA, and SA 	07.01.2009 - 12.31.2015
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ICRISAT	Improving the Livelihoods of Smallholder Farmers in Drought-prone Areas of Sub-Saharan Africa and India through Enhanced Grain Legume Production and Productivity - Tropical Legumes II, Phase 2 (Bill and Melinda Gates Foundation (BMGF), USA)	CGIAR	Nil	<p>1. Acharya N.G. Ranga Agricultural University (ANGRAU), Hyderabad</p> <p>2. University of Agricultural Sciences UAS (Dharwad)</p> <p>3. University of Agricultural Sciences UAS (Raichur)</p> <p>4. University of Agricultural Sciences (UAS-Bangalore)</p> <p>5. Tamil Nadu Agricultural University (TNAU), Coimbatore</p> <p>6. Orissa University of Agriculture & Technology (OUAT), Orissa</p> <p>7. Bihar Agricultural University (BAU - Bihar)</p> <p>8. Bangladesh Agricultural Research Institute (BARI)</p>	Telangana, Karnataka, Tamil Nadu, Orissa, and Bihar	<ul style="list-style-type: none"> - To enhance market opportunities, policies and partnerships along the legume value chain to increase income and nutritional security of smallholder farmers in drought-prone areas of Sub-Saharan Africa (SSA) and South Asia (SA) - To enhance groundnut productivity and production in drought-prone areas of SSA and SA - To enhance cowpea productivity and production in drought-prone areas of SSA - To enhance common bean productivity and production in drought-prone areas of SSA - To enhance chickpea productivity and production in drought-prone areas of SSA and SA - To enhance pigeonpea productivity and production in drought-prone areas of SSA and SA - To enhance Soybean productivity and production in drought-prone areas of sub-Saharan Africa - To develop sustainable seed production and delivery systems for reaching smallholder farmers in drought-prone areas of Sub-Saharan Africa (SSA) and South Asia (SA) - Project management, prioritization, monitoring and evaluation, data management and communication 	09.01.2011 - 02.28.2015
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ICRISAT	Implementing the Activities under the Strategy and Results Framework (SRF) (India)	CGIAR	Nil	Nil	Nil			04.01.2012 - 03.31.2016
ICRISAT	Pigeonpea Improvement using Molecular Breeding (USAID)	CGIAR	Nil	1. Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad 2. University of Agricultural Sciences, Raichur (UAS-Raichur)	Telangana and Karnataka		<ul style="list-style-type: none"> - Mapping of targeted traits using linkage and nested-association mapping (NAM) approaches - Mapping of targeted traits and harnessing the germplasm diversity using genome-wide association study (GWAS) and multi-parents advanced genetic intercross (MAGIC) approaches - Integrating superior alleles from wild <i>Cajanus</i> species using introgression library (IL) approach - Developing a breeders-friendly database with trait-associated marker, haplotypes and genetic diversity information for future pigeon pea breeding programmes - Capacity building and training breeders/scientists in high-throughput genome analysis and modern breeding approaches for pigeon pea improvement 	10.01.2012 - 09.30.2015

ICRISAT	Collaboration and Establishment of A Regional Hub of the Integrated Breeding Platform	CIMMYT: CP-Generation	Nil		Nil		-The Platform aims to build vibrant crop-based communities of practice to facilitate mutually beneficial sharing of experiences, information, tools, best practices and improved varieties; while promoting application-oriented and more collaborative research approaches. It provides community-building and interaction facilities for peer-to-peer support and problem solving.	06.01.2014 - 05.31.2016
ICRISAT	Watershed Project - Bhujal	Coca Cola India Foundation, India	Nil	ICAR-Center for Agroforestry Research Institute (CAFRI), Jhansi	Uttar Pradesh	Increasng productivity; Production systems development and management; Protecting environment/ climate change	- Formation of watershed committee; Rainwater harvesting strcutres; Agroforestry; Proudctivity enhancmeent intervetions; Training; Improved management practices; and exposure visits	05.01.2011 - 04.30.2016

ICRISAT	Enhancing Resilience to Climate Variability and Change in Watersheds with Focus on Groundnut and Pigeonpea in the Indian SAT	CRIDA, India (under NICRA)	CCAFS	Nil	India and Karnataka	Increasing productivity, Protecting the Environment / Climate Change	<ul style="list-style-type: none"> - Develop daily climate database containing maximum and minimum temperatures for the period 1971-2007 and rainfall for the period 1971-2011, for 586 districts in India - Climate change analyses leading to quantification of changes in Semi-Arid areas in India - Develop crop cultivar coefficients for groundnut (ICGV 91114) under DSSAT and for pigeonpea (TS 3R) under APSIM and making available in public domain for crop modelling applications - Publication of research papers 	2010 - 2015
ICRISAT	Development and Promotion of Promising Varieties/Lines with High Yield and High Oil Content with Enhanced O/L Ratio for Enhancing Production and Quality of Groundnut Oil in Drought Prone Environment to Boost the Income of Small & Marginal Groundnut Farmers in India	Department of Agriculture & Cooperation, India	Nil	<ol style="list-style-type: none"> 1. Acharya N.G. Ranga Agricultural University (ANGRAU), Tirupati 2. Tamil Nadu Agricultural University (TNAU), Coimbatore 3. Directorate of Groundnut Research (DGR), Gujarat 4. Junagadh Agricultural University (JAU), Gujarat 	Gujarat, Tamil Nadu, Andhra Pradesh, Telangana	<p>Germplasm Enhancement & Breeding; Strengthening NARS; Training and Professional Development; Documentation, Publications, Info. Dissemination</p>	<p>Four stable high oil yielding, farmer-preferred, groundnut varieties (ICGVs 05155, 06420, 03042 and 03043) were promoted to Advance Varietal Trials (AVT) in Zone V based on their superior performance over the best zonal check in Initial Varietal Trials (Stage I and II) conducted during 2013 and 2014 under AICRP-G.</p> <p>* The high oil varieties recorded 10-17% higher mean oil yield and 16-20% higher mean pod yield over best zonal check.</p> <p>* ICGV 06146 a high oil yielding and foliar fungal disease tolerant variety is promoted to ART trials for state release in Tamil Nadu.</p> <p>* 10 high oil lines for kharif season and three lines for rabi-summer season were proposed for AICRP-G testing.</p> <p>* Fifty Farmer Participatory Varietal Selection (FPVS) trails were conducted in Gujarat, AP and TN and about 5.0 tons of Nucleus Seed of selected high oil varieties was produced.</p>	04.01. 2011-12.31. 2015

						<p>* Two-hundred and thirty 'high oleic' advanced breeding lines were developed and evaluated</p> <p>* Sixty five superior 'high oleic' lines with superior yield were advanced to multi-location trails in 2016</p> <ul style="list-style-type: none"> • Allele specific and CAPS markers for 'high oleic' trait were validated and used marker assisted breeding to develop 'high oleic' groundnut varieties in the background of high and low oil elite lines. <p>* Eight QTLs governing high oil content identified. Allele mining revealed rarity of FADB mutant allele and its predominant role compared to the frequent FADA mutant allele in governing oleic acid content</p> <p>* TNAU, JAU and ANGRAU were able to deploy marker assisted breeding for 'high oleic' trait.</p> <p>* Near-infrared reflectance spectroscopy (NIRS), a robust and non-destructive method of estimating oil and fatty acid content of kernels is now routinely used in groundnut breeding program.</p> <p>Expected Outcomes</p> <p>Revival of groundnut economy in the country- increased groundnut oil productivity and production; increase in area under groundnut cultivation; enhanced income to groundnut farmers and oil millers; Reduction in India's dependency on imported edible oil; Annual estimated savings of at least 600 crore rupees ((based on full adoption of new varieties with increased oil content of 2 per cent) worth of foreign exchange as a result of reduced import of edible oil;</p>	
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							<p>Reductions in cost and increase in efficiency of NARS breeding programs through use of markers in Marker-Assisted Backcrossing (MAB); Health and nutrition benefits due to increased availability and consumption of high quality and healthy groundnut oil and groundnut kernels – a low-cost commodity rich in protein, minerals and vitamins; Food processing industry will benefit from the increased shelf life of groundnut oil and other groundnut products as a result of enhanced O/L ratio; Social benefits include increased purchasing power of poor farmers through increased income levels and rural employment generation through revival of groundnut oil industry; and Capacity building in NARS in marker-assisted breeding.</p>	
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ICRISAT	Developing Chickpea Cultivars Suited to Mechanical Harvesting and Tolerant to Herbicides	Department of Agriculture & Cooperation, India	CRP-GL, ICRISAT	<p>1. Punjab Agricultural University (PAU), Ludhiana</p> <p>2. Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya (RVSKVV)-RAK College of Agriculture, Sehore</p> <p>3. University of Agricultural Sciences (UAS-Dharwad)</p> <p>4. Acharya N.G. Ranga Agricultural University (ANGRAU)-Regional Agricultural Research Station (RARS), Nandyal</p> <p>5. Indian Agricultural Research Institute (IARI), New Delhi</p> <p>6. Indian Institute of Pulses Research (IIPR), Uttar Pradesh</p>	Andhra Pradesh, Telangana, Karnataka, Madhya Pradesh, Uttar Pradesh, Punjab	Germplasm Enhancement & Breeding (2) Strengthening NARS	<ul style="list-style-type: none"> • At least one cultivar suited to mechanical harvesting released/proposed for release each in northern, central and southern India. • New breeding lines suited to mechanical harvesting and adapted to each region developed through targeted breeding. • Combine harvesters suitable for chickpea harvesting available. • Sources of herbicide tolerance identified from germplasm/breeding lines or induced through mutation breeding. • Breeding lines with enhanced herbicide tolerance developed for each target region 	2013 - 2017
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ICRISAT	Addressing Phytophthora Blight Disease: an Emerging Threat to Pigeonpea Expansion and Production	Department of Agriculture & Cooperation, India	Nil	<ol style="list-style-type: none"> 1. Punjab Agricultural University (PAU), Ludhiana 2. Banaras Hindu University (BHU), Varanasi 3. RAK College of Agriculture (RAKCA), Sehore 	Madhya Pradesh, Punjab and Uttar Pradesh	<ul style="list-style-type: none"> • Increasing productivity • Germplasm Enhancement & Breeding • Production Systems • Cropping Systems • Protecting the Environment / Climate Change • Strengthening NARS • Training and Professional Development • Documentation, Publications, Info. Dissemination • Networks 	<ul style="list-style-type: none"> • Current status of the occurrence and distribution of Phytophthora blight of pigeonpea mapped and documented. • Identification, characterization & taxonomic placing of <i>P. cajani</i> in Oomycetes group defined. • Protocol for isolation, sporangia and zoospore production standardized • Resistance screening technique for Phytophthora blight for identification of resistant sources developed • Knowledge generated shared with NARS partners through training, conferences and publications • Trained PhD students and Post-doctoral fellows on different aspects of Phytophthora blight of pigeonpea 	2013 - 2017
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ICRISAT	Macro Management of Agriculture - Supplementation/ Complementation of States' Efforts through Work Plan: Release of Central Assistance during 2007-2008	Department of Agriculture & Cooperation, India	Nil	<ol style="list-style-type: none"> 1. BAIF Development Research Foundation, Gujarat 2. Motta Vadala Watershed Development Main 3. BAIF Development Research Foundation Madhya Pradesh 4. Adarsh Watershed Development Samiti "Pragati" 5. SHRISTI, Odisha 6. Program Account- Model Watershed Naugaon 7. JalaSRI, Maharashtra 8. Coordinator Watershed Surveillance Research Institute, Jalgaon 9. Padmalaya Model Watershed Development Sanstha 10. People's Education and Development Organization (PEDO), Rajasthan 11. Adarsh Jal Sangrahan Vikas 	Andhra Pradesh, Karnataka, Maharashtra, Tamail Nadu, Uttar Pradesh, Madhya Pradesh, Gujarat, Rajasthan, Orissa	Increasing productivity; Production systems development and management; Cropping systems and Livestock systems; Protecting environment/climate change	<ul style="list-style-type: none"> • Conservation of rainwater and rainwater harvesting and management of groundwater • Efficient use of integrated water resources in the watersheds • Integrated soil fertility management (ISFM) • Market-led diversification using legumes, vegetables and fruits • Empowering the community through suitable knowledge management and sharing (KMS) systems. 	2007 - 2015
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				Samiti-Saram 12. Rural Education & Agriculture Development (READ), Hyderabad 13. Model Watershed Committee 14. Development Alternatives (DA), Uttar Pradesh 15. Adarsha Jalsangrahan Vikas Samiti, Domagorpahu 16. NRCAF - Jhansi 17. TVS-ASRI, Tamil Nadu 18. Melakari Madhiri Neer Vadipakuthi Membatu Sangam 19. Bijapur Integrated Rural Development Society (BIRDS), Karnataka 20. Sri Madivaleshwara Madari Jalanayana Abhivrudhi Sangha				
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ICRISAT	Utilizing Chickpea Genome Sequence for Crop Improvement	Department of Agriculture & Cooperation, India	ICARDA	<p>1. ICARDA</p> <p>2. Junagadh Agricultural University (JAU), Gujarat</p> <p>3. Rajmata Vijayaraje Scindia Krishi Vishwavidyalaya (RVSKVV) - RAK College of Agriculture (RAKCA), Sehore</p> <p>4. Indian Institute of Pulses Research (IIPR), Kanpur</p> <p>5. Rajasthan Agricultural Research Institute (RARI), Durgapura</p>	Gujarat, Madhya Pradesh, Uttar Pradesh, and Rajasthan		<p>(i) Release of molecular breeding products for drought tolerance</p> <p>(ii) Genomic selection (GS), a new molecular breeding approach integrated in chickpea breeding programmes in India</p> <p>(iii) Molecular markers for target traits for developing next generation of superior varieties</p> <p>(iv) Superior alleles for target traits from wild chickpeas using introgression library (IL) approach</p> <p>(v) Databases with genotyping and phenotyping information for chickpea breeding community</p> <p>(vi) Community of practice of molecular breeding in chickpea in India</p>	2014-2017
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ICRISAT	Crop Biofortification of Groundnut and Pigeonpea for Alleviating Vitamin A Deficiencies in India	Department of Biotechnology, India	CRP-GL, ICRISAT	Nil	Groundnut growing states	Semi-arid tropics	<ul style="list-style-type: none"> - Data on molecular and genetical analysis for gene integration, stability and expression in advanced generation of available transgenic plants available. - Optimization of protocols for biochemical estimation of β-carotene in the groundnut seeds using HPLC techniques for minimizing its degradation during analysis. - Biochemical analysis of selected transgenic plants for enhanced levels of β-carotene (pro-vitamin A), total carotenoids and chlorophyll content in the advanced generations under containment greenhouse completed. - At least 80 transgenic groundnut events carrying genes for β-lycopene cyclase alone or in combination with phytoene synthase will be developed and established in containment greenhouse. - Molecular and genetic characterization for gene integration, stability and expression in first generation plants completed. - Preliminary bioavailability studies on the selected β-carotene enriched groundnut events by using the methodologies standardized at the National Institute for Nutrition (NIN-Hyderabad) using mouse/gerbils as the models carried out. 	09.21.2010 - 09.20.2015
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ICRISAT	Biofortifying Sorghum with High Grain Iron and Zinc Content for Combating Micronutrient Malnutrition	Department of Biotechnology, India	CRP-A4NH	1. Directorate of Sorghum Research (DSR), Hyderabad 2. Vasant Rao Naik Marathwada Krishi Vidyapeeth (VNMKV), Maharashtra	Telangana, and Maharashtra	Germplasm Enhancement & Breeding	Development of new mapping populations; Identification of QTLs controlling grain Fe and Zn concentration in sorghum using existing mapping population	02.28.2012 - 02.27.2016
ICRISAT	Genomics Assisted Accelerated Product Development of High Yielding Pigeonpea Hybrids	Department of Biotechnology, India	Nil	Krishidhan Seeds Private Limited (KSPL), Maharashtra	Maharashtra		<ul style="list-style-type: none"> - Identification of complementary heterotic groups and the relationship between groups - Provide the means (lines with heterotic genomic segments or blocks) and methods to combine genomic segments for heterosis to create better groups and parents for productive F1 hybrids - Lead to purposeful/guided breeding for heterotic F1 hybrids instead of the present combinatorial efforts like in the case of corn where defining heterotic pools (else align with existing heterotic pools) is the first exercise. - Molecular tagging of restorer gene/s to permit transference of restorer genes to non-restorer (but good combiners) parents and to pyramid multiple restorer genes. Thus improving the cross combination options chances and developing more stable restorer lines. - A panel of SNPs for any application involving genetic fingerprinting that include; genetic linkage mapping, marker-phenotype association, identification of genomic blocks (QTLs) accounting for variation in the character of interest, diversity analysis, fore ground selection 	08.28.2012 - 12.31.2015

							and background recovery during marker assisted breeding , etc	
ICRISAT	Development of Low-lignin High-biomass Sorghums Suitable for Biofuel Production	Department of Biotechnology, India	CRP-DC	Indian Institute of Millets Research (IIMR), Hyderabad	Maharashtra, Telangana	Germplasm Enhancement & Breeding	- Transferring brown midrib (bmr) trait in to high biomass sorghums to produce high biomass lines with low-lignin content using marker assisted backcrossing	09.27.2012 - 12.26.2015

ICRISAT	Integrating Bio-treated Wastewater with Enhanced Water Use Efficiency to Support the Green Economy in EU and India (Water4Crops)	Department of Biotechnology, India	Nil	<ol style="list-style-type: none"> 1. SABMiller India Limited, Haryana 2. University of Agricultural Sciences, Bangalore (UAS-B) 3. Jain Irrigation Systems Limited (JISL), Maharashtra 4. EIRC Consulting Private Limited (EIRC), Karnataka 5. The Energy and Resources Institute (TERI), New Delhi 6. M.S. Swaminathan Research Foundation (MSSRF), Tamil Nadu 7. CSIR-National Environmental Research Institute (CSIR-NEERI), Nagpur 	No State specific	Protecting Environment and climate change; Production systems development and management	<ul style="list-style-type: none"> • Impact of treated and untreated wastewater use on soil, crop and groundwater quality • Optimized fungal consortium for wastewater treatment • Impact assessment of treated wastewater use in agriculture, benchmark sites characterized • Efficient irrigation system evaluated • Impact assessment of wastewater on crops, soil and groundwater documented 	11.05.2012 - 11.04.2016
ICRISAT	Fellowship for Mr. Y.Shashidhar under DBT-JRF Programme in	Department of Biotechnology, India	Nil	Nil	Nil			09.24.2013 - 03.31.2015

	Biotechnology and Applied Biology.							
ICRISAT	Biofortification of Long Chain Polyunsaturated Fatty Acids in Peanut by Metabolic Engineering of Fatty Acid Biosynthetic Pathway	Department of Biotechnology, India	CRP-GL, ICRISAT	Nil	Groundnut growing states	Semi-arid tropics	<ul style="list-style-type: none"> - Cloning and sequence analysis of delta-6-desaturase and delta-15-desaturase genes. - Cloning of oil body/seed-specific promoters and binary vectors construction for Agrobacterium-mediated transformation in peanut. - Development of at least 200 marker-free T0 transgenic peanut events. - PCR, RT-PCR and qPCR analysis of T0 putative transgenic plants and advancement of generations - Molecular characterization including genomic Southern blot for copy number. - Fatty acid profiling in T2 seeds of peanut using non-destructive methods. 	11.21. 2014 - 11.20. 2017
ICRISAT	Biofertilization and Bioirrigation for Sustainable Mixed Cropping of Pigeonpea and Finger Millet (BIOFI) under Indo-Swiss Collaboration in Biotechnology	Department of Biotechnology, India	Nil	Nil	Nil		<ol style="list-style-type: none"> 1. Development of sustainable pigeon pea and finger millet inter-cropping systems based on the selection of responsive cultivars and validated processes of biofertilizers and bioirrigation 2. Integrated assessment of inter cropping systems, seed systems and biofertilizer supply 3. Increased adoption of climate resilient intercropping system with improved access and use of biofertilizer by small and marginal farmers 4. New standards in the Indo-Swiss research community integrating biotechnology and socio-economic aspects, extensions and market partners 	10.21. 2014 - 10.20. 2017

ICRISAT	Marker Assisted Introgression of Different Traits to Develop New Generation Rice Varieties	Department of Biotechnology, India	Nil	Nil	Nil			07.01.2013 - 06.30.2018
ICRISAT	Establishment of Model Watersheds in Maharashtra, Madhya Pradesh, Rajasthan and Tamil Nadu States under Technology Development Extension & Training (TDET)	Department of Land Resources, India	Nil	BYPASS Santhan (MP); WOTR (Maharashtra) Seva Mandir (Rajasthan) CIRHEP (Tamil Nadu)	Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu	Increasing productivity; Production systems development and management; Cropping systems and Livestock systems; Protecting environment/ climate change	<ul style="list-style-type: none"> • Conservation of rainwater and rainwater harvesting and management of groundwater • Efficient use of integrated water resources in the watersheds • Integrated soil fertility management (ISFM) • Market-led diversification using legumes, vegetables and fruits • Empowering the community through suitable knowledge management and sharing (KMS) systems. 	2009 - 2015
ICRISAT	Innovation in Science Pursuit for Inspired Research (INSPIRE) - Faculty Award for Dr. Hima Bindu Kudapa	Department of Science & Technology, India	Nil	Nil	Nil	Increasing productivity, Documentation, Publications, Info. Dissemination	<ul style="list-style-type: none"> • qRT-PCR assays for drought- and salinity-responsive genes in chickpea • Validated candidate genes and perfect gene-based markers associated with drought tolerance in chickpea for the breeding programs 	04.01.2012 - 03.31.2017

ICRISAT	Innovation in Science Pursuit for Inspired Research (INSPIRE) - Faculty Award for Dr. Palakolanu Sudhakar Reddy	Department of Science & Technology, India	Nil	Nil	Semi-arid region	Protecting the Environment / Climate Change	<p>1. Transgenic tobacco plants were developed for different stress inducible promoters and conclude that PgHsc70 and PgLea were active in the heat, PgDhn pro in heat, cold and drought and PgApx pro in drought stress condition.</p> <p>2. This study will have more biotechnological applications as these promoters could be used to engineer the target genes to express only at the site of stress</p>	09.03.2012 - 09.02.2017
ICRISAT	Innovation in Science Pursuit for Inspired Research (INSPIRE) - Faculty Award for Dr. Santisree Parankusam	Department of Science & Technology, India	Nil	Nil	Global	Protecting the Environment / Climate Change; Increasing productivity	<ul style="list-style-type: none"> - Better understanding of the drought tolerant mechanisms in chickpea - Evaluation of the beneficial potential of the nitric oxide donor on drought stress amelioration - Establishing the global protein expression profiles of nitric oxide donor treated chickpea plants - Comparison of proteome dynamics and identification of the differentially expressed proteins by drought stress in chickpea 	12.05.2012 - 12.04.2017
ICRISAT	Characterization of Novel Brown Midrib (bmr) Sorghum Mutants and Improving the Conversion Efficiency for Higher Biofuels and Bioproducts Recovery	Department of Science & Technology, India	CRP-DC	Nil	Nil	Germplasm Enhancement & Breeding	<p>1. Establishing allelic relationships among various brown midrib sources; development of novel brown midrib high biomass sorghum lines by transferring bmr genes</p> <p>2. Biochemical changes with introduction of bmr genes</p>	03.01.2013 - 02.28.2016

ICRISAT	Characterization of Defensive Insectidal Proteins (lectins and serpins) from Plants for Deployment in Transgenic Crops Controlling Cotton Bollworm, <i>Helicoverpa armigera</i>	Department of Science and Technology (thru Science and Engineering Research Board (SERB), India	Nil	Nil	Global		Objectives of the proposed project: The proposed studies will focus on characterization of potent PIs and lectins from non-host plants of <i>H. armigera</i> for deployment in transgenic plants for sustainable crop production. 1. Isolation and purification of lectins and serpins from non-host plants and study their biochemical and insecticidal properties. 2. Study the structural dynamics of the identified insecticidal non-host plant's lectin and serpin to know their structure - function relationship. 3. Isolation and characterization of <i>H. armigera</i> gut proteinases against the lectin and serpin proteins to develop strategies for deployment of in transgenic plants for pest management	2013 - 2016
ICRISAT	Biochemical and Molecular Mechanisms of Insect Host Plant Resistance Signaling System to Spotted Stem Borer, <i>Chilo Partellus</i> in Sorghum	Department of Science and Technology (thru Science and Engineering Research Board (SERB), India	Nil	Nil	Global		1. Identification of secondary metabolites influencing antixenosis for oviposition and survival and development of the stem borer, <i>C. partellus</i> . 2. Identification of elicitors of secondary metabolites in sorghum against <i>C. partellus</i> . 3. Transcriptome analysis of resistant/susceptible genotypes of following insect damage/ application of elicitors of induced resistance in sorghum to identify biochemical markers for developing high yielding cultivars with resistance to <i>C. partellus</i> .	2013 - 2016

ICRISAT	Harnessing the Role of Aquaporins in Water Conservation and Drought Tolerance Improvement in Pearl Millet	Department of Science and Technology (thru Science and Engineering Research Board (SERB), India	Nil	Nil	Semi-arid region	Protecting the Environment / Climate Change	Transgenic tobacco plants were developed for SbTIP2;1 and PgPIP2;6 to understand the water saving/drought stress mechanisms, which underlie an essential phenotype for plant adaptation to drought, in pearl millet/Sorghum towards cultivar improvement.	2013 - 2016
ICRISAT	Tracking Breeding - Induced Genomic Genome changes in pigeonpea (Cajanus Cajan (L) Millsp.)	Department of Science and Technology (thru Science and Engineering Research Board (SERB), India	Nil	Nil	Nil	Increasing productivity	Objectives: 1. Identify genotypes from three time-differentiated germplasm pools for genome wide SNP analysis. 2. Develop the protocols for SNP genotyping. 3. Analysis aimed at detecting changes in the genomic diversity in the released varieties with respect to time and of a "signature" in the pigeonpea genome that could be ascribed to intense breeder selection for ever-greater grain yield	2014 - 2016

ICRISAT	Assessment of Actinomycetes as Tripartite Agent: Biocontrol of Botrytis Grey Mold, Host-Plant Resistance Enhancer and Growth Promoter on Chickpea (<i>Cicer Arietinum</i> L.)	Department of Science and Technology (thru Science and Engineering Research Board (SERB), India	Nil	Nil	Nil	Increasing productivity	Objectives: - To isolate, screen and characterize plant growth promoting actinomycetes from rhizosphere and endophytes of healthy chickpea stem, root and leaves; and <i>B. cinerea</i> from infected chickpea plants - To analyze the antagonistic behavior of the selected PGP strains and the pathogen - To evaluate the pathogen control and host-plant resistance contributed by the PGP actinomycetes against BGM in glasshouse conditions - To determine the activity of antioxidant enzymes, and profiling of phenolics and key defense proteins along with signaling molecules of treated and non-treated plants.	08.05.2014 - 08.04.2017
ICRISAT	Pre-breeding for Chickpea Improvement	Department of Science and Technology (thru Science and Engineering Research Board (SERB), India	Nil	Nil	Nil		<ul style="list-style-type: none"> • Development of protocols for anther and microspore culture for generating DH in chickpea using 3-5 genotypes/germplasm lines • Testing the efficiency of these protocols on different chickpea genotypes (~10-12) 	05.18.2012 - 05.17.2015

ICRISAT	Pathological , Cultural Variability and Sequence Diversity in Rhizoctonia Bataticola Causing Dry Root Rot of Chickpea	Department of Science and Technology (thru Science and Engineering Research Board (SERB), India	Nil	Nil	Nil	<ul style="list-style-type: none"> • Increasing productivity • Germplasm Enhancement & Breeding • Protecting the Environment / Climate Change • Strengthening NARS • Training and Professional Development • Documentation, Publications, Info. Dissemination • Networks 	<ul style="list-style-type: none"> • Occurrence, distribution and likely changes in the geographical distribution of dry root rot (<i>Rhizoctonia bataticola</i>) disease of chickpea mapped. • <i>Rhizoctonia bataticola</i> isolates repository maintained in Legumes Pathology at ICRISAT and sequence information available in NCBI database for further use by scientific community. • Molecular and morphological diversity as well as intra-population diversity in <i>Rhizocotonia bataticola</i> in India known and documented • Dry root rot in chickpea is likely to increase under climate change scenario and this study will be useful in identifying the location-specific <i>R. bataticola</i> resistant cultivars. 	05.15. 2012 - 05.14. 2015
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ICRISAT	Tracking Aspergillus Flavus Toxigenic Strain AF 11-4 in Groundnut Crop Soils Using SCAR Marker Based PCR Diagnostic Assay	Department of Science and Technology (thru Science and Engineering Research Board (SERB), India	Nil	Nil	Nil		<ol style="list-style-type: none"> 1. Estimating genetic variation among the toxigenic strains of Aspergillus flavus through RAPD analysis 2. Designing a SCAR marker for A. flavus toxigenic strain AF 11-4 3. Testing the efficacy of SCAR marker 4. Setting up a diagnostic PCR assay for rapid detection of AF11-4 	07.10.2012 - 07.09.2015
ICRISAT	DST-ICRISAT Center of Excellence (CoE) on Climate Change Research for Plant Protection (CCRPP)	Department of Science and Technology, India	Nil	Nil	Nil	<p>Strengthening NARS Protecting the Environment / Climate Change Training and Professional Development Documentation, Publications, Info. Dissemination Improving Policies Networks</p>	<p>plant protection such as open top chambers (OTC), Free Air CO2 Enrichment Facility (FACE) established at ICRISAT for use by the national and international partners to conduct research on climate change and plant health.</p> <ul style="list-style-type: none"> • Current trends of disease spectrum, severity of damage and outbreaks in chickpea and pigeonpea that are likely to infect grain legumes identified and mapped. • Techniques standardized to identify varieties that are able to respond to climate change and to develop climate resilient disease management systems for sustainable production. • Significant information generated on effect of climate change variables (temperature, humidity and CO2) on host x pathogen/pest interactions that will be helpful in developing disease/pest management strategies. • Trained students and post-docs in climate change research for plant 	11.30.2011 - 05.31.2015

						<p>protection (PhD student: 8 -Pathology and Entomology; Post Docs: 4)</p> <ul style="list-style-type: none"> • Trainings/Exposure visits: More than 250 trainees from various State Universities and NARS visited the facility • Publications: 43 (Pathology and Entomology) including Journal articles, conference papers, Symposiums, invited lead lectures and Book chapters • Possible policy briefs generated for inclusion in DST's "National Mission on Strategic Knowledge for Climate Change (NMSKCC)". • CoE-CCRPP program highlighted at the Indo-Pavilion of the prestigious COP 21 under the United Nations Framework Convention on Climate Change (UNFCCC) in Paris <p>Facilities for climate change research on</p>	
ICRISAT	Genomic Approaches for Stress Tolerant Chickpea	Department of Science and Technology, India	Nil	<p>1. National Institute of Plant Genomic Research (NIPGR), New Delhi</p> <p>2. Indian Agricultural Research Institute (IARI), New Delhi</p>	Uttar Pradesh, Punjab and Haryana	<ul style="list-style-type: none"> • Characterisation of key germplasm currently used for chickpea breeding in India and Australia. A detailed analysis of the phenotypic components of drought, heat and salinity responses, and the associated analysis of genotypic variation will lead to new screening strategies. • Information on novel germplasm to expand the base for stress tolerance breeding and selection. This will include an evaluation of both unadapted germplasm and novel population structures. • Molecular markers associated with key loci for stress tolerance and screening protocols suitable for use in breeding and selection. Certain traits will be targeted for positional cloning. Perfect markers for key traits can be used for marker assisted 	03.28. 2012 - 03.27. 2016

							<p>and genomic selection and the genes allow genetic engineering of stress tolerant chickpea and other pulses. The outcome is an increase in options available and the sophistication of pulse breeding.</p> <ul style="list-style-type: none"> • Novel breeding strategies based on genome-wide selection allow screening and evaluation of alleles at multiple loci that may individually have only a small effect but when combined can lead to substantial improvements in yield under stress. This approach is possible due to availability of historical phenotyping data from extensive ICRISAT materials, and the current feasibility of high resolution genotyping. • Technological and scientific platforms to improve stress tolerance in other pulses including pigeon pea, lentil, field pea, lupin and faba bean. • The next generation of pulse breeders for India and Australia 	
ICRISAT	Support for Establishment of Technology Business Incubator at ICRISAT	Department of Science and Technology, India	Nil	Nil	All states	Strengthening NARS	<ul style="list-style-type: none"> • Provide incubation Support Services to Agribusiness entrepreneurs, Start-Ups. • Provide technology and support for product development and refinement • Generate income for sustainability of TBI, and Secure Service Tax exemption for TBI and its incubatee. 	04.01.2003 - 03.31.2016

ICRISAT	Study to Assess the feasibility of Upscaling the Weather-based Agro-Advisories Model Development under SDC Supported CCA Project	Embassy of Switzerland , India	Nil	Nil	No State specific	Protecting Environment and climate change; Saving biodiversity	The main output of this assignment will be a report detailing the techno economic feasibility for upscaling the weather-based agro-advisory system developed by WOTR and provide recommendations for enhancing technical soundness and robustness of WOTR's weather-based agro-advisory model for scaling-up.	08.08.2014 - 04.30.2015
ICRISAT	Intercropping of Banana and Sweet Sorghum in Marginal Lands of Gujarat, India to Demonstrate Socioeconomic and Environmental Benefits	GIZ, Germany	CRP-DC	Abellon Clean Energy Ltd (ACEL), Gujarat	Gujarat	Increasing productivity; Cropping Systems;	1. Identified two locally adapted high biomass yielding salinity tolerant sweet sorghum cultivars 2. Identified one locally adapted productive banana cultivar 3. Established productive intercropping system 4. Socio-economic and environmental benefits analysed and established	06.01.2013 - 05.31.2015
ICRISAT	Genetic Resources Collections of ICRISAT	GIZ, Germany	Nil	Nil	Nil		maintenance of the genetic resources collections (genebank)	01.01.2013 - 12.31.2015
ICRISAT	Providing for the Long-Term Funding of Ex Situ Collections of Germplasm Held by ICRISAT	Global Crop Diversity Trust (GCDT)	Nil	Nil	Nil			01.01.2007 - 12.31.2016
ICRISAT	RegenIntro: Introduction of Accessions from the Regeneration Initiative into the International Collections held by ICRISAT	Global Crop Diversity Trust (GCDT)	Nil	Nil	Nil		support to the ongoing work at ICRISAT to introduce into the international collections, accessions received from national institutes funded by the Trust to undertake the regeneration, characterisation and safety duplication of unique accessions.	2013 - 2016

ICRISAT	Mission Project on Bridging Crop Yield Gaps through Science - Lead Development in Andhra Pradesh under Buchetana - RKVY 2011 - 2015	Government of Andhra Pradesh, India	Nil	ANGRAU, CRIDA, APSRSC, NGOs, CBOs	Andhra Pradesh	<p>Increasing productivity; Production systems development and management; Protecting environment/climate change</p>	<ol style="list-style-type: none"> 1. Identifying best-bet options (soil, crop and water management) including improved cultivars to enhance productivity of the selected crops in 22 districts by 25%. 2. Preparing GIS-based soil maps depicting micro- and macro- nutrient status of the soils using data generated by GoAP and develop taluk-based nutrient management recommendations for the major agricultural crops grown in the districts. 3. Assessing the likely impacts of climate change in the target agroecoregions and identify suitable adaptation strategies to cope with the anticipated impacts due to climate change 4. Building capacity of the stake holders (farmers and consortium partners) in the sustainable management of natural resources, enhancing productivity in dryland areas and adaptation strategies for the impacts of climate change in the area of participatory research for development approach.. 	2011 - 2016
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ICRISAT	Sujala - ICRISAT Project on Capacity Building for Productivity Enhancement in Watersheds	Government of Karnataka	Nil	Nil	Karnataka	Training and professional development; Strengthening NARS; Production systems development and management	<ul style="list-style-type: none"> • Developing an information structure and help in adaptation of evolving scientific decision making tools and models that would be developed in the project for integrated micro-watershed planning over four years period (2014-15 to 2017-18). • Undertaking lead role in capacity strengthening of policy makers and other stakeholders down to community level through well designed training programs and exposure visits to sites where innovative technologies are adopted for watershed management as well as livelihood improvement. • Assisting Watershed Development Department of Karnataka in Designing, Developing and Deployment of the Digital Library, Decision Support Systems, LRI Portal and LRI Disaster Recovery Centre and Provide Technical Support for implementation by the Selected Vendor. 	10.09.2014 - 10.08.2018
ICRISAT	Soil Testing in the 1st Phase Districts of Bhoochetana where Nutrients Management taken up in Bhoochetana Project after Completion of 1st Phase.	Government of Karnataka, India	Nil	Nil	Karnataka			05.01.2012 - 03.31.2015

ICRISAT	Soil Testing in Irrigated Paddy and Sugarcane Crops under Bhoochetana for 2012 - 2013	Government of Karnataka, India	Nil	Nil	Karnataka			04.01.2012 - 03.31.2015
ICRISAT	Improving Rural Livelihoods through Innovative Scaling-up of Science-led Participatory Research for Development in Karnataka, India	Government of Karnataka, India	AVRDC, CIMMYT, ICARDA, ICRAF, IFPRI, ILRI, IRRI, and IWMI	1. Digital Green, New Delhi 2. Indian Institute of Technology Kharagpur (IITKgp), West Bengal; World Vegetable Center and Other CG Institutions: IWMI, ILRI, CIMMYT, ICARDA, IFPRI, IRRI; State Agricultural Universities	Karnataka	Increasing productivity; Production systems development and management; Protecting environment/climate change; Livestock systems; Tree Systems; Saving Biodiversity	<ul style="list-style-type: none"> Established pilots and innovation platforms as “ Sites of Learning” for farmers – line departments – researchers – policymakers Reduced vulnerability to changes due to climate change, climate variability and market forces through improved crop-livestock systems and diversified livelihoods Build capacity of the stakeholders to operationalize science-led development approach taking holistic system-level interventions The expected increase in productivity of the agricultural systems by 20% is based on the assumption that science-led interventions will result in increased systems productivity by 30 to 70 %. The expected increase in systems productivity is in the range of 30 to 70% which will result in the benchmark site systems productivity increase by 20%. 	06.06.2012 - 06.05.2016

ICRISAT	Strengthening Bhoochetana a Sustainable Agriculture Mission for Improved Livelihoods in Karnataka - Bhoochetana Phase II.	Government of Karnataka, India	Nil	Indian Institute of Technology Kharagpur (IITKgp), West Bengal; State Agricultural Universities; University of Horticulture, Bagalkot	Karnataka	Increasing productivity; Production systems development and management; Protecting environment/climate change; Strengthening NARS; Improving policies	<ol style="list-style-type: none"> 1. Increased yields of major crops by 20 per cent over average yields recorded in the state during first phase of four years of BC mission project. 2. Through village seed banks, seeds of improved crops (pulse, groundnut and legumes) will be available for the farmers. 3. Increased agricultural income of the small and marginal farmers and gross value of agricultural produce in the state. 	06.01. 2013 - 05.31. 2018
ICRISAT	Promotion of Improved Chickpea Varieties in Rice - Based Cropping Systems of Smallholder Farmers in Odisha	Government of Odisha, India	CRP-GL, ICRISAT	Department of Agriculture, Government of Odisha	Odisha	Increasing productivity; Production Systems Development and Management	<ul style="list-style-type: none"> • Areas under improved chickpea cultivars enhanced by 20%; • 2-3 new chickpea cultivars suitable for cultivation in Odisha identified; • Suitable crop management package for grain production developed; • Extension staff and farmers trained on chickpea production and processing technology 	2014-15 - 2017-18

ICRISAT	Introduction and Expansion of Improved Pigeonpea (Arhar) Production Technology (IPPT) in Rainfed Upland Ecosystems of Odisha	Government of Odisha, India	CRP-GL, ICRISAT	1. Juba Jyoti Jubak Sangha (JJJS), Orissa 2. LOKSEBAK, Orissa 3. Orissa Professional Development Service Consultants (OPDSC), Orissa 4. Sahabhagi Vikash Abhiyan (SVA), Orissa 5. Krishi Vigyan Kendra, Umerkote (KVK-Umerkote), Orissa 6. People's Forum, Odisha 7. Shramik Shakti Sangha (SSS), Odisha 8. Centre for Social and Tribal Development (CSATD), Odisha	Odisha	o Increasing productivity o Production Systems Development and Management o Cropping Systems o Training and Professional Development o Documentation, Publications, Info. Dissemination	<ul style="list-style-type: none"> • Areas under improved pigeonpea cultivars enhanced. • New pigeonpea varieties/hybrids suitable for cultivation in Odisha identified. • Suitable crop management package for grain production developed. • On-farm demonstrations with farmers' participation conducted • Income of farmers enhanced by marketing value added products • Information on production and marketing constraints identified and solutions found. • Extension staff and farmers trained in pigeonpea production and processing technology • Protein requirements of Odisha farmers fulfilled with the locally produced pigeonpea dal 	05.01.2011 - 04.30.2015
ICRISAT	Support for Genebank Research Activities Including Germplasm Evaluation	ICRISAT	Nil	Nil	Nil			01.01.2007 - 12.31.2016

ICRISAT	Sustainable Management of Crop-based Production Systems for Raising Agricultural Productivity in Rainfed Asia	IFAD	CRP-GL, ICRISAT	1. Mitigating Poverty in Western Rajasthan (MPOWER), Rajasthan 2. Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya (RVSKVV), Madhya Pradesh 3. Jharkhand Tribal Development Society (JTDS), Jharkhand	Jharkhand, Madhya Pradesh, Rajasthan	(1) Increasing productivity (2) Production Systems Development and Management, (3) Strengthening NARS	(1) Resilient, productive, diversified cereal/legume cropping systems and their management technologies; (2) A decision-support system integrating improved drought forecasting and crop diversification strategies; (3) Sustainable, local seed support systems and opportunities for value addition at the local level; (4) NARS personnel trained in developing innovations and decision-support systems; and (5) Knowledge-empowered farmers adopting project-generated innovations and technologies.	05.07.2012 - 06.30.2016
ICRISAT	Assessment of Plausible Futures of Dryland Agriculture in Semi-Arid Tropics and Alternative Technologies / Management Systems and Interventions (Activity # 22) and Development and Enhancement of Methods and Tools for Better Targeting, Impact Assessment and Priority Setting for crops	IFPRI	CRP DC, GL and CCAFS	Nil	Semi-Arid regions in India (AP, TN, Telangana, Maharashtra, Gujarat, Haryana)	Protecting the Environment / Climate Change; Documentation, Publications, Info. Dissemination	1. Assessed the climate change impacts and potential benefits of drought and heat tolerance cultivars in groundnuts, chickpea and sorghum in India; 2. Collated and documented experimental trial data sets, soil and weather information for selected location in India for system model calibration and validation; 3. Improved system models for climate change impact assessment and technologies evaluation	10.14.2014 - 12.31.2015

ICRISAT	Partnership-based Genetic Enhancement of Pearl Millet for High Grain Iron Density and Improved Human Nutrition in India - HarvestPlus Phase II	IFPRI/CIAT	A4NH, ICRISAT	<p>1. Mahatma Phule Krishi Vidyapeeth (MPKV), Maharashtra</p> <p>2. Swami Keshwanand Rajasthan Agricultural University (SKRAU), Rajasthan</p> <p>3. Junagadh Agricultural University (JAU), Gujarat</p> <p>4. Vasant Rao Naik Marathwada Krishi Vidyapeeth (VNMKV), Maharashtra</p> <p>5. CCS Haryana Agricultural University (CCSHAU), Haryana</p> <p>6. Narendra Agriculture University (SKNAU), Jobner</p> <p>7. Pioneer Overseas Corporation, Hyderabad</p> <p>8. JK Agri Genetics Limited, Hyderabad</p> <p>9. Shakti Vardhak Hybrid Seeds Private Limited, Haryana</p> <p>10. Kaveri Seeds Company Limited,</p>	<p>Maharashtra, Haryana, Gujarat, Rajasthan, Telangana, Karnataka</p>	<p>1. Germplasm Enhancement & Breeding</p> <p>2. Increasing productivity</p> <p>3. Documentation, Publications, Info. Dissemination</p>	<p>- Improved high-iron variety (OPV) for fast-track release in India</p> <p>- Multi locational evaluation /validation of advanced breeding lines, hybrids parents for grain Fe and Zn density</p> <p>- Initiate national biofortification hybrid trial in coordination with AICPMIP</p> <p>- Screening of advanced breeding lines, germplasm for Fe/Zn density</p> <p>- Database on Fe and Zn density in hybrids tested in AICPMIP's Advanced Hybrid Trials</p> <p>- Publications (journal articles)</p>	01.01.2009 - 12.31.2015
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ICRISAT	Identification of Micronutrients - Dense-Sorghums for Better Health in Central India - HarvestPlus Phase II	IFPRI/CIAT	CRP-A4NH	1. ICRISAT-Mali and Nigeria; 2. Vasant Rao Naik Marathwada Krishi Vidyapeet (VNMKV), Parbhani and Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola in India	Maharashtra	Increasing productivity	NA	01.01.2010 - 12.31.2015
ICRISAT	US-India Consortium for Development of Sustainable Advanced Lignocellulosic Biofuel Systems (SALBS)	Indo-US Joint Clean energy Research and Development Center (JCERDC), thru IICT, India	CRP-DC	Indian Institute of Millets Research (IIMR), Hyderabad, Rajmata Vijayaraje Scindhia Krishi Vishwavidyalaya (RJKVV), Tamil Nadu Agricultural University, Abellon Clean Energy Ltd, Indian Institute of Chemical Technology, IIT-Delhi, IIT-Chennai and others	Madhya Pradesh and Gujarat	Germplasm Enhancement & Breeding; Increasing productivity; Production Systems Development and Management	1. Novel high biomass sorghum hybrids (3-5) for commercialization for biofuels and bioproducts production adapted to target environments and development of low lignin sorghum lines by transferring bmr genes 2. Standardised protocols for efficient recovery of bioethanol, biobutanol and glycerol from biomass of bmr hybrids.	11.01.2012 - 10.31.2017

ICRISAT	Improving Rural Livelihoods in Benchmark thru Integrated Watershed Management in Selected Villages of Bellary District in Karnataka, India	Jindal South West Foundation	Nil	Pranathi Rural Development Society (PRDS), WDD and DoA, Government of Karnataka	Karnataka	Increasing productivity; Production systems development and management; Cropping systems and Livestock systems; Protecting environment/climate change	<ul style="list-style-type: none"> • Exemplar watershed in Bellary district is established as "Site of Learning" for integrated water resource development. • Well-trained human resources to plan develop and execute integrated watershed management programs enhancing the impact of these projects. • Long-term data on impacts of watershed management in terms of hydrology, crop production, incomes and social development will have available for low rainfall agro-eco-region. 	04.01.2013 - 03.31.2018
ICRISAT	Improving Widely Grown Groundnut Cultivars by Introgressing Genes for Resistance to Foliar Fungal Diseases (LLS and rust) and High Oil Quality (O/L ratio)	MARS, USA	Nil	Directorate of Groundnut Research (DGR), Junagadh	Gujarat			07.21.2013 - 07.20.2018

ICRISAT	Organize the Collection of Crop Germplasm Improvement Research Related Direct Outcomes in South, Southeast and East Asia	Michigan State University , USA (ISPC)	CRP-GL and DC, ICRISAT	IIPR, Kanpur; IIDWBR, Karnal; FCRI, Vietnam; OCRI, China; DAR, Myanmar	UP, MP, Haryana, Rajasthan, West Bengal and Bihar	Improving policies; Documentation, Publications, Info. Dissemination; Increasing productivity	- Better information on adoption of improved cultivars of Barley and Lentils in the target locations, - Deeper understanding about crop improvement and impacts in the target locations	07.01.2014 - 02.29.2016
ICRISAT	Selection of Implementing Agency (IA) for Setting up 5 (Five) Numbers of Food Testing Laboratories (FTLs) in Africa under IAFS-II.	Ministry of Food Processing Industries, Government of India (MoFPI)	Nil	Nil	Africa	Training and Professional Development	<ul style="list-style-type: none"> • Development of feasibility studies and business plan for FTL in Congo, Rwanda, Zimbabwe, Gambia • Finalization of FTL lay out and equipment to be procured for identified FTL • Preparation of tender document for purchase of equipment 	11.26.2012 - 11.25.2015
ICRISAT	Selection of Implementing Agency (IA) for Setting up of 5 (Five) Numbers of Food Processing Business Incubation Centers (FPBICs) in Africa under IAFS-II.	Ministry of Food Processing Industries, Government of India (MoFPI)	Nil	Nil	Africa	Training and Professional Development	<ul style="list-style-type: none"> • Development of feasibility studies and business plan for FPBIC in Uganda, Cameroon and Ghana, • Finalization of FPBIC lay out and equipment to be procured for the three FPBIC • Preparation of tender document for purchase of equipment 	11.26.2012 - 11.25.2015

ICRISAT	Ensuring Human Health, Food and Nutritional Security through Novel Cereal and Fruit Based Products - Indian-Sri Lankan Inter-Governmental Science & Technology Cooperative Programme	Ministry of Science and Technology, India	CRP DC	ITI, Colombo	Global	Production Systems Development and Management	Prebiotic potential of Sorghum and Pearl millet assessed. Variability in prebiotic components established. Probiotic bacteria isolated and characterised for their probiotic properties. Probiotic bacteria along with pearl millet and sorghum flour evaluated for preparation of probiotic food products	01.28.2013 - 01.29.2016
ICRISAT	Enhancing Livelihoods through Livestock Knowledge Systems (ELKS)	Navajbai Ratan Tata Trust	Nil	Nil	Nil			01.01.2011 - 03.31.2015
ICRISAT	Collaborate to Increase and Enhance Chickpea and Pigeonpea Production Technologies in the Farmers' Fields of the Districts of Andhra Pradesh and Karnataka under India Food Legumes Initiative	OCP Foundation, Morocco	CRP-GL, ICRISAT	1. Professor Jayashankar Telangana State Agricultural University (PJTSAU) 2. University of Agricultural Sciences (UAS-Raichur)	Karnataka and Telangana	Increasing Productivity	Improved varieties tested and evaluated through on-farm participatory approach; Integrated crop management options refined and tested by farmers; Functional village-level based seed delivery systems established; Back up research to enhance technology generation, including, IPM/ICM, Crop improvement, adapted mechanization carried out; Capacity building and networking of all stakeholders achieved	04.01.2013 - 03.31.2017

ICRISAT	Characterization of Commercial Hybrids to Enable Model applications for Environmental Characterization in India	Pioneer Overseas Corporation , USA	Nil	Nil	All of India	Germplasm Enhancement & Breeding	Characterize commercial hybrids for the following traits: transpiration efficiency, leaf conductance response to VPD, Transpiration response to progressive water stress exposure and water uptake rates. Demonstration of the VPD response trait as a key breeding target for maize hybrid breeding in India	10.01.2012 - 12.31.2015
ICRISAT	Improving Rural Livelihoods through Farmer-Centric Integrated Watershed Management in Karnataka	Power Grid Corporation of India Limited	Nil	Shree Banashankari Mahila & Makkala Abhivruddi Samsthe@, Ukkali; WDD and DoA, Government of Karnataka;	Karnataka	Increasing productivity; Production systems development and management; Cropping systems and Livestock systems; Protecting environment/climate change	<ul style="list-style-type: none"> • Exemplar watershed in benchmark location will be established as “Site of Learning” for integrated water resource development. • Productivity of agricultural crops at benchmark locations will be increased by 20% and family incomes will be increased by 50% in five years • Cropping intensity will be increased by 20-30% depending on the rainfall situation 	03.01.2014 - 02.28.2019

ICRISAT	Improving Rural Livelihoods through Farmer-Centric Integrated Watershed Management in Andhra Pradesh	Power Grid Corporation of India Limited	Nil	Rural Studies & Development Society (RSDS) DoA, Government of Andhra Pradesh	Andhra Pradesh	Increasing productivity; Production systems development and management; Cropping systems and Livestock systems; Protecting environment/climate change	Exemplar watershed in benchmark location will be established as "Site of Learning" for integrated water resource development. Productivity of agricultural crops at benchmark locations will be increased by 20% and family incomes will be increased by 50% in five years Cropping intensity will be increased by 20-30% depending on the rainfall situation	03.01.2014 - 02.28.2019
ICRISAT	Farmer-centric Integrated Watershed Management for Improving Rural Livelihoods	Rural Electrification Corporation Limited (RECL), India	Nil	SAMATHA Society for Rural Education and Development; BAIF Institute for Rural Development (BIRD-K); DoA, Government of AP and Government of Telangana	Andhra Pradesh and Telangana	Increasing productivity; Production systems development and management; Cropping systems and Livestock systems; Protecting environment/climate change	<ul style="list-style-type: none"> Exemplar watershed in benchmark location will be established as "Site of Learning" for integrated water resource development. Productivity of agricultural crops at benchmark locations will be increased by 20% and family incomes will be increased by 50% in five years Cropping intensity will be increased by 20-30% depending on the rainfall situation 	05.29.2014 - 05.28.2019

ICRISAT	Conservation and Harvesting of Rainwater and Increasing the Water Use Efficiency for Agricultural Production and Sustainable Development	SAB Miller India	Nil	Rural Education & Agriculture Development (READ), Hyderabad	Telangana	Increasing productivity; Production systems development and management; Cropping systems and Livestock systems; Protecting environment/climate change	Increased availability of surface and ground water resources; Enhanced water use efficiency leading to increased productivity and livelihoods; increased awareness on natural resources management and efficient use of water resources; increased milk yield and fat content; increased income and livelihood opportunities for farmers and land less; strengthening and empowering women SHG	09.01.2009 - 04.30.2015
ICRISAT	Diversification of Sorghum Hybrid Parents for Increased Stable Production	Seed Companies	Nil	Nil		Germplasm Enhancement & Breeding	Parental/breeding lines	2009 - 2018
ICRISAT	Diversification of Pearl Millet Hybrid Parents for Increased Stable Production	Seed Companies	Nil	Nil		Germplasm Enhancement & Breeding	Parental/breeding lines	2009 - 2018

ICRISAT	Diversification of Pigeonpea Hybrid Parents for Increased Stable Production	Seed Companies	CRP-GL, ICRISAT	National Seeds Corporation, State Seed Corporations, NGOS, Private Companies, Progressive Farmers	Andhra Pradesh, telangana, Odisha, Maharashtra, Gujarat, Karnataka, Madhya Pradesh, Uttar Pradesh	o Increasing productivity o Training and Professional Development o Documentation, Publications, Info. Dissemination	Heterotic hybrids developed for different agro ecologies. A set of stable pigeonpea CMS lines and their maintainers developed. A set of fertility restoring lines with high combining ability developed. Early maturing pigeonpea hybrids developed and evaluated. High yielding early maturing hybrids identified. Seed production technology of hybrids and their parents developed. Research technicians trained in hybridization and evaluation of hybrids.	2009 - 2018
ICRISAT	Groundnut and Chickpea Varietal Development Research Consortium	Seed Companies	Nil	Nil	Tamil Nadu, Andhra Pradesh, Gujarat, Haryana, and Karnataka		Parental/breeding lines	01.01. 2009 - 12.31. 2015
ICRISAT	a) Research in Sustainable NRM in Agon & Ghagas Villages in Gurgaon District of Haryana and b) Research on Downy Mildew Resistance in Pearl Millet, and Shoot Fly and Grain Mould Resistance in Sorghum	SFF/ICRISAT Endowment	Nil	Nil	Haryana, and Telangana			01.01. 2007 - 12.31. 2015

ICRISAT	Development of Hybrid Pigeonpea Technology Suitable for Rajasthan	Swami Keshwanand Rajasthan Agricultural University, Government of Rajasthan, India	CRP-GL, ICRISAT	SKRAU, Rajasthan, Department of Agriculture	Rajasthan	<ul style="list-style-type: none"> o Increasing productivity o Production Systems Development and Management o Cropping Systems o Strengthening NARS o Training and Professional Development o Documentation, Publications, Info. Dissemination 	<p>A set of stable pigeonpea CMS lines and their maintainers developed.</p> <p>A set of fertility restoring lines with high combining ability developed.</p> <p>Early maturing pigeonpea hybrids developed and evaluated.</p> <p>High yielding early maturing hybrids identified.</p> <p>Seed production technology of hybrids and their parents developed.</p> <p>Research technicians trained in hybridization and evaluation of hybrids.</p>	01.01.2012 - 12.31.2016
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ICRISAT	Enhancing Livelihoods of Resource-poor Farmers of Rajasthan through Introduction of Eco-friendly Pigeonpea Varieties	Swami Keshwanand Rajasthan Agricultural University, Government of Rajasthan, India	CRP-GL, ICRISAT	SKRAU, Rajasthan, Department of Agriculture	Rajasthan	<ul style="list-style-type: none"> o Increasing productivity o Production Systems Development and Management o Cropping Systems o Strengthening NARS o Training and Professional Development o Documentation, Publications, Info. Dissemination 	<p>Areas for implementation of pigeonpea production programme identified.</p> <p>An efficient self-sustaining seed system developed.</p> <p>Information on production constraints identified and solutions found.</p> <p>Suitable crop management package for high productivity developed.</p> <p>On-farm demonstrations with farmers' participation conducted.</p> <p>Extension staff and farmers trained in seed and crop production.</p> <p>Protein rich food (dal) made available to the farmers with their own produce.</p> <p>New pigeonpea varieties suitable for cultivation developed.</p>	01.01.2012 - 12.31.2016
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ICRISAT	Integrated Water Resource Development in Kolar District through Watershed Interventions	The Coca-Cola Foundation, USA	Nil	MYRADA, Karnataka	Karnataka	Increasing productivity; Production systems development and management; Cropping systems and Livestock systems; Protecting environment/climate change	Demand driven technologies; Capacity building of the stakeholders; Ensuring tangible economic benefits for all the participants.	2012 - 2016
ICRISAT	Genome-wide Association Studies (GWAS) to Identify Markers Associated with Target Traits for Peanut Breeding using Diverse Global Germplasm Collections	The Regents of the University of California	Nil	Nil	Nil		Compile the phenotyping data and their analysis as well as identifying marker-trait based on GWAS.	07.01. 2013 - 06.30. 2015
ICRISAT	Global Hunger and Food Security Research Strategy: Climate Resilience, Nutrition and Policy-Feed the Future Innovation Lab for Climate Resilient Sorghum	The University of Georgia Research Foundation Inc.	Nil	South Africa ARS - IER Mali - Juma University Ethiopia	Nil	Germplasm Enhancement & Breeding	Genetic regions involved in WUE traits in sorghum - main stress scenarios characterized for Mali	08.26. 2013 - 08.25. 2018

ICRISAT	Translational Genomics to Reduce Pre-harvest Aflatoxin Contamination of Peanut	The University of Georgia Research Foundation Inc.	Nil	Nil	Nil	<ol style="list-style-type: none"> 1. U.S. and ICRISAT locations will target testing of 200 entries with ample replication per year under stress conditions conducive for aflatoxin formation. One germplasm set, the "aflatoxin core", will be tested in both locations. 2. ISRA will grow an average of 80 entries (introgression lines) per year under stress conditions conducive for aflatoxin formation. 3. Aflatoxin data will be exchanged and evaluated at the end of each growing season, in particular to inform the selection of genotypes for evaluation in the following year. 4. U.S. and ICRISAT scientists will genotype at least 1700 lines, most within the first two years of the project. Genotyping of MAGIC lines will be delayed until year 4 to allow time for the population to be developed (Fig. 1). 5. All genotype and phenotype data will be exchanged, and genotype-trait analyses will be conducted by each group with the populations most relevant to their environments and breeding programs. We expect to identify QTL and begin to pyramid these using marker-assisted backcrossing and marker-assisted recurrent selection. Genetic stocks with potential to contribute resistance to PAC will be made available to other groups conducting breeding activities. 6. A MAGIC population will be developed and selection of a population subset for PAC testing will be initiated late in the 	11.01. 2013 - 10.31. 2017
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							<p>project. 28-2 way crosses in the diallel method from 8 MAGIC parents were made during the post-rainy 2012-13 season. Making of the 14 4-way crosses presently is underway. Phenotyping will be done in S6 (F7) (Rainy 2017) for yield and yield parameters under drought location in India. Additional phenotyping will be conducted after seed increase on a subset of the MAGIC population.</p> <p>7. The potential to apply GS to breeding for PAC resistance will be assessed late in the project.</p> <p>8. A workshop for African breeders from FTF target countries will be organized in the third year of the project to inform them of recent developments in peanut breeding that can be directly applied to their own breeding programs or facilitated by interaction with other groups</p>	
ICRISAT	Unlocking Health Benefits of Pearl Millet: Identifying Factors for Starch Digestibility, and Slowly Digestible Starch (SDS) using a World Inbred Germplasm Association Panel	Unilever Industries Pvt. Ltd.,	CRP DC	Hindustan Unilever Research Center	Global	Production Systems Development and Management	<p>Factors responsible for slowly digestible starch (SDS) in pearl millet deciphered. Variability for slowly digesting starch (SDS) in global pearl millet panel assessed.</p> <p>Accessions for SDS and low GI traits in PMiGAP, mapping population parents and mapping population identified and shared.</p>	08.01.2012 - 07.31.2015

ICRISAT	Development of Abiotic Stress Tolerant Millet for Africa and South Asia	University of California, USA	Nil	Nil	Nil	Germplasm Enhancement & Breeding	By the end of the grant period, we expect to have one year of field trials that demonstrate an increase in yield over current drought tolerant elite lines. ICRISAT and its partners, with technical support from Arcadia on regulatory compliance as needed, is positioned to further develop these lines for commercialization in India and then moving subsequently to Africa.	11.01.2012 - 10.31.2016
ICRISAT	Strategic Gender Research Activities - South Asia: Activity 1: Study on Extension Services for Smallholders	ICARDA	Nil	Nil	Nil			2014 - 2015
ICRISAT	Strategic Gender Research Activities - South Asia: Activity 2: Livestock: Improved Livelihoods for Women in Crop-Livestock Systems	ICARDA	Nil	Nil	Nil			2014 - 2015

ICRISAT	Providing Technical Assistance to Government of Andhra Pradesh for Primary Sector Mission	Government of Andhra Pradesh, India	Nil	<ol style="list-style-type: none"> 1. PROTECT, Prakasham Dist 2. Weaker Section Social Welfare Association (WSSWA), Kadapa Dist 3. Aranya Agriculture Alternatives (AAA), Kothapet, Hyderabad 4. Accion Fraternal Ecology Center (AFEC), Ananthapur 5. AMMAVODI, Vizianagaram 6. The Chaitanya Rural Development Association (CRDA), Eluru, W.G.Dist 7. Chaitanya Youth Association (CYA), Kurnool Dist 8. Integrated Rural Development Society (IRDS), Chittoor Dist 9. Mamre Foundation Society (MFS), Kadapa Dist 10. NAVAJEEVAN ORGANIZATION, Nellore Dist 11. Nature Voluntary Organization (NVO), East Godavari 	Andhra Pradesh	<p>Increasing productivity;</p> <p>Production systems development and management;</p> <p>Protecting environment/climate change;</p> <p>Livestock systems;</p> <p>Tree Saving Biodiversity;</p> <p>improving policies</p>	<ol style="list-style-type: none"> 1. The first and foremost important output from this initiative will be establishment of 13 pilot sites of learning in the districts which can be effectively used for dissemination and capacity development for operationalizing the primary sector mission demonstrating increased crop productivity by 50% along with crop diversification and increased milk, meat and eggs productivity/production by 30% and increased incomes by 100 per cent over baseline. 2. International quality assurance standards established for selected soil analysis labs (determined by the DoA) and by upgrading two existing analytical labs as model labs in the state and establish innovative ICT-based extension system for 13 mandals piloted. 3. Effective convergence model for enhancing primary sector productivity through increased efficiency of resource use will be established and primary sector mission will be operationalized in 13 districts. 4. Livelihoods of small farmholders in the first five years will be improved through increasing incomes at pilot sites by 100% and through capacity development and dissemination at other sites to the extent feasible. The spill over will effectively benefit all the remaining farmers in 13 districts. 	02.17.2015 - 02.16.2020
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ICRISAT	Support for Fifth International Conference on Next-Generation Genomics and Integrated Breeding for Crop Improvement.(Bill and Melinda Gates Foundation (BMGF), USA)	CGIAR (BMGF grant)	Nil	Nil	Nil		provide a platform for scientists to interact with each other and present their work and discuss different aspects of modern genomics and breeding for crop improvement.	01.16.2015 - 03.31.2015
ICRISAT	Global Hunger and Food Security Research Strategy : Climate Resilience, Nutrition, and Policy - Feed the Future Innovation Lab for Climate Resilient Chickpea	The regents of University of California	Nil	EIAR Ethiopia - Dicle University Turkey	Nil	Germplasm Enhancement & Breeding	To take part and coordinate the phenotyping efforts around drought adaptation, and offer training to partners in that domain. Introgression lines with wild segments from reticulatum having interesting characteristics for adapting to water limitation.	01.01.2015 - 12.31.2015
ICRISAT	Chickpea Genome Sequencing and Analysis	ICARDA	Nil	Nil	Nil		Sequencing 3000 accessions to chickpea	2014 - 2016

ICRISAT	Tropical Legumes III - Improving Livelihoods for Smallholder Farmers: Enhanced Grain Legume Productivity and Production in Sub-Saharan Africa and South Asia	CGIAR - Bill & Melinda Gates Foundation	Nil	Indian Institute of Pulses Research (IIPR), Kanpur	Uttar Pradesh		Objective 1: Leverage Gender and Learning to Maximize Poverty and Food Security Impacts for Smallholder Farmers Objectives 2 – 5 Breeding Support and Breeding Program Strengthening for Groundnut, Common Bean, Cowpea and Chickpea Objective 3: To Enhance Cowpea Productivity and Production in Drought-Prone Areas of Sub-Saharan Africa Objective 4: To Enhance Common Bean Productivity and Production in Drought-Prone Areas of Sub-Saharan Africa Objective 5: To Enhance Chickpea Productivity and Production in Drought-Prone Areas of Sub-Saharan Africa and South Asia Objective 6. Impact-Oriented Legume Seed Systems for Smallholder Farmers Objective 7. Project Management and Oversight	04.23.2015 - 04.30.2019
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ICRISAT	Commercialization of Sweet Sorghum as a Compliment Feedstock for Ethanol Production in the suger mills of Maharastra, Tamil Nadu and Gujarat.	Department of Biotechnology, India	CRP-DC	Indian Institute of Millets Research (IIMR), Hyderabad, Jawaharlal Nehru Technological University, Hyderabad, National Federation of Co-operative Sugar Factories Ltd., Sugarl mills in target states	Maharastra, Tamil Nadu and Gujarat.	Protecting the Environment / Climate Change; Production Systems Development and Management Cropping Systems Livestock Systems	Identification of promising sweet sorghum genotypes adapted to target states by multi-location testing; Standardizing package of practices for maximizing yield; Conducting BIG MILL TESTs for demonstrating the potential of sweet sorghum as a complemetary feedstock for ethanol production	03.31.2015 - 03.30.2018
ICRISAT	Understanding Molecular Defence Mechanism and Identification of Candidate Genes for Resistance to Aspergillus Infection and Aflatoxin Cantamination in Groundnut	IFPRI	A4NH, ICRISAT	Crop Protection and Management Research Unit (CPMRU), USDA-ARS, Tifton, USA	India and USA	Understanding molecular mechanisms	1. Effect of oxidative stress on A. flavus can provide evidence of the fungal behavior in oxidative stress which can further be used effectively in diminishing the fungal growth in post-harvest storage; and 2. Better understanding of molecular mechanisms of A. flavus infection and plant defense can be achieved.	03.01.2015 - 3.31.2016
ICRISAT	Understanding the Drought Tolerance Mechanism in Chickpea using Epigenetics (INSPIRE) - Faculty Award for	Department of Science and Technology, India	Nil	Nil	Nil	Increasing productivity	1. Epigenetically modified genes for drought tolerance in chickpea 2. Increased understanding of genetic mechanism for drought tolerance 3. Information generated by comparison of epigenome regulation between tolerant and susceptible parents and its RILs	04.30.2015 - 04.29.2020

	Dr. Manish Roorkiwal							
ICRISAT	Promotion of Farmer Producer Organizations in Tamilnadu, India	NABARD, India	Nil	<ol style="list-style-type: none"> 1. Kavery Sangamam Producer Company Limited (KSPCL), Tamil Nadu 2. Poompuhar Cauvery Delta Farmers Producer Company Limited (PCDFPCL), Tamil Nadu 3. Thirumoorthimalai Farmer Producer Company Limited (TMPCL), Tamil Nadu 4. Kottur Malayandipattinam Farmers Producer Company Limited (KMFPCCL), Tamil Nadu 	Tamil Nadu	Training and Professional Development	<p>Training of 200 staff of POPI and coordinators.</p> <p>Conduct of FPO summit to enhance the success of FPOs through market linkages and additional investments – 200 participants.</p> <p>Publication on “Best practices for FPOs” and “Winning streaks of FPOs”.</p> <p>Mobile-based platform for monitoring and evaluation of FPOs launched and used by FPOs.</p>	2015 - 2018

ICRISAT	Establishment of Commercially Valuable Sorghum Lines with Drought Tolerance and Photoperiod Insensitivity	Earthnote Co. Ltd	Nil	Nil	Nil	Increasing productivity Germplasm Enhancement & Breeding Protecting the Environment / Climate Change	Investigation of regulatory mechanisms behind root angle determination and photoperiod sensitivity in sorghum; Breeding sorghum varieties with enhanced productions under unfavourable environment such as drought and short day-length (i.e. winter).	07.01.2015 - 12.31.2017
ICRISAT	Promotion of Farmer Producer Organizations in Andhra Pradesh, India	NABARD, India	Nil	Nil	Andhra Pradesh	Training and Professional Development	No. of FPOs to be established and sustained in three years: 10 No. of farmers to be benefited from the FPOs: 5,000 No. of farmers to be trained: 625 No. of FPO coordinators to be trained: 150	2015 - 2018
ICRISAT	Promotion of Farmer Producer Organizations in Telangana, India	NABARD, India	Nil	Nil	Telangana	Training and Professional Development	No. of FPOs to be established and sustained in three years: 10 No. of farmers to be benefited from the FPOs: 5,000 No. of farmers to be trained: 625 No. of FPO coordinators to be trained: 150	2015 - 2018
ICRISAT	Resource Support Agency for Promotion of FPOs in Telangana State, India	NABARD, India	Nil	Nil	Telangana	Training and Professional Development	No. of training: 5 No. of trained manpower: 150 No. of training days: 25 No. of FPO training Modules: 5	2015 - 2018

ICRISAT	Tata-ILRI Partnership Project on Enhancing Sustainable Livelihoods of Marginal Communities through Targeted Livestock Research	Navajbai Tata Trust, India	Nil	Nil	Nil			04.01.2015 - 09.30.2017
ICRISAT	Enhancing Sustainable Livelihoods of Marginal Communities through Targeted Livestock Research under Central Himalayan Livestock Initiative (CHLI)	Himmotthan Society, India	Nil	Nil	Nil			04.01.2015 - 03.31.2018
ICRISAT	Enhancing Sustainable Livelihoods of Marginal Communities through Targeted Livestock Research	North East Initiative Development Agency, India	Nil	Nil	Nil			04.01.2015 - 03.31.2018
ICRISAT	Scaling-up of Improved Groundnut Varieties through Established Seed System in Various Cropping Systems	Government of Odisha	Nil	Nil	Odisha	Increasing productivity; Training and Professional Development	Outputs (2015 rainy season): <ul style="list-style-type: none"> • During 2015 kharif season, 32 tons of Foundation Seed (FS), 49 tons of Certified Seed (CS) and 136 tons of Truthfully (TL) seed of Devi (ICGV 91114) in Kalahandi, Naupada and Bolangir districts. • 600 farmers produced CS of Devi (ICGV 91114) in 218 ha 	2015 - 2019

	of Smallholder Farmers in Odisha					ent; Document ation, Publicatio ns, Info. Dissemina tion	<ul style="list-style-type: none"> • 760 farmers including 85 women were trained on groundnut seed production and ICM practices • Large scale demonstrations of two new pipeline varieties, ICGV 02266 and ICGV 00351 with ICM were conducted in 8 ha • 30 FPVS trials were conducted to test four new varieties with local checks ICGV 02266, a dual purpose, water-stress tolerant variety is proposed for release in State, this variety was earlier identified as farmer-preferred variety under TL II. • Developed new water-stress tolerant varieties with fresh seed dormancy to feed into 'variety pipeline' <p>Expected outcomes: "Areas under improved groundnut cultivars enhanced by 20%; 2-3 new improved groundnut cultivars suitable for cultivation in Odisha identified; Suitable crop management package for production developed; Institutionalized seed system model; On-farm demonstrations with farmers' participation conducted; Income of farmers enhanced by marketing value-added products; Information on production and marketing constraints identified and solutions found; Extension staff and farmers trained on groundnut production and processing technology; Protein requirements of Odisha farmers fulfilled with the locally produced groundnut; A good portion of groundnut seed requirement of the state is fulfilled; 5000MT of groundnut seed is made available; 10000 farmers trained on improved package of practices for groundnut cultivation; and At least one</p>	
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							HYV groundnut is released in Odisha through OUAT	
ICRISAT	Introduction and Expansion of Improved Pigeonpea (Arhar) Production Technology in Rainfed Upland Ecosystems of Odisha	Government of Odisha	CRP-GL, ICRISAT	OUAT, Odisha, Department of Agriculture	Odisha	Increasing productivity Production Systems Development and Management Cropping Systems Strengthening NARS Training and Professional Development Documentation, Publications, Info. Dissemination	Areas under improved pigeonpea cultivars enhanced; New pigeonpea varieties / hybrids suitable for cultivation in Orissa identified; Suitable crop management package for grain production developed; On-farm demonstrations with farmers' participation conducted; The income of farmers enhanced by marketing value added products; Information on production and marketing constraints identified and solutions found; Extension staff and farmers trained in pigeonpea production and processing technology; The protein requirements of Orissa farmers fulfilled with the locally produced pigeonpea dal.	2015 - 2018
ICRISAT	Establishing Intellectual Property Facilitation Centre for MSMEs by ICRISAT	Ministry of Micro, Small & Medium Enterprises (MSME) , India	Nil	Nil	Andhra and Telangana	Documentation, Publications, Info. Dissemination	<ul style="list-style-type: none"> • Establishment of IPFC at ICRISAT • Development of IPFC web Page and promotional activity • Development of IP services plan for MSME entrepreneurs 	2015 - 2017

ICRISAT	Identification of Heterotic Pools Amongst Diverse African and Asian Pearl Millet Populations Using Molecular Markers: An Attempt towards Higher Yielding Hybrids for the Future	SM Sehgal Foundation	CRP-DC	PJTSAU, Telangana (Ph.D. student)	Global	Increasing productivity, Germplasm enhancement and Breeding	Heterotic patterns available for pearl millet populations; Populations identified for initiating selection and deriving future inbreds for the development of high-yielding hybrids; Genetic diversity pattern of Indian hybrids revealed.	09.01.2015 - 08.31.2017
ICRISAT	Identification of Superior Alleles and Lines from Wild Cajanus Species for Pigeonpea (Cajanus cajan) Improvement	The Global Crop Diversity Trust (GCDT)	CRP Grain Legumes and CRP Genebank	ANGRAU, Andhra Pradesh, PJTSAU, Telangana and Bioseed Reserch India, Hyderabad	Andhra Pradesh, Telangana	<ul style="list-style-type: none"> o Increasing productivity o Germplasm Enhancement & Breeding o Cropping Systems o Strengthening NARS o Documentation, Publications, Info. Dissemination 	ILs having high levels of resistance/tolerance against salinity, and Phytophthora blight identified; Identified ILs would be evaluated across multi-locations and can be released as varieties as well as utilized as new and diverse sources of resistance/tolerance in breeding pipeline to develop new cultivars with a broad genetic base; High-yielding varieties having high levels of resistance against salinity and Phytophthora blight developed for cultivation by the farmers in different cropping systems across different agro-ecologies; New advanced backcross population developed; Pod borer resistant ILs identified for utilization in breeding programs; QTLs marking segments of interest coming from wild species for deployment in pigeonpea breeding program; Promising ILs conserved in genebank for use in pigeonpea breeding program to develop varieties and hybrids with a broad genetic base	07.01.2015 - 06.30.2018

ICRISAT	Synthesis of New Abiotic and Biotic Stress Tolerant Gene Pool through Introgression of Alleles from Wild Species into Pearl Millet Cultivars	The Global Crop Diversity Trust (GCDDT)	Nil	Nil	Nil		Stable flowering stage heat tolerant ILs derived from <i>P. violaceum</i> identified; Terminal drought tolerant ILs derived from <i>P. violaceum</i> identified; Physiological traits associated with drought tolerance identified. knowledge of plant water budget characteristics of two backcross populations providing potential variants adapted to a wide range of stress conditions; Terminal drought and flowering stage heat tolerant ILs having blast resistance derived from <i>P. violaceum</i> identified; Introgression lines shared with pearl millet researchers worldwide to develop improved cultivars with traits introgressed from wild relatives and conserved in genebank for future use.	09.01.2015 - 12.31.2018
ICRISAT	Fellowship Grant for Ms. Lingampali Shiva Bargavi - DBT-JRF 2015-16	Biotech Consortium India Limited, India	Nil	Nil	Nil			09.15.2015 - 03.31.2016
ICRISAT	Development of High Yielding Water and Labor Saving Rice Varieties for dry Direct Seeded Aerobic Conditions Utilizing Recent Discoveries on Traits QTLs, genes and Genomic Technologies	DBT - India	Nil	Nil	Nil			12.02.2015 - 12.01.2020

ICRISAT	Identification and Evaluation of Helicoverpa Armigera (Hubner) Induced Plant Volatiles in Cultigen and Wild Relatives of Pigeonpea for Increasing the Effectiveness of the Parasitoid Campoletis Chlorideae for Pest Management	SERB, DST, India	Nil	Nil	Nil	Increasing productivity	Effectiveness of the larval parasitoid, C. chlorideae for controlling H. armigera on pigeonpea under greenhouse conditions. Identification, characterization and quantification differential volatile emissions responsible for of host searching behavior H. armigera and its parasitoid, .Olfactometer bioassay with air entrained samples of pigeonpea and putative synthetic kairomone blends to H. armigera/ C. chlorideae. To study the electrophysiological responses of pest and natural enemy to synthetic compounds	11.27. 2015 - 11.26. 2018
ICRISAT	Biochemical and Molecular Mechanisms of Resistance to Spotted Stem Borer, Chilo Partellus in Sorghum	SERB, DST, India	Nil	Nil	Nil	Increasing productivity	Identification of plant secondary metabolites associated with resistance to C. partellus; Identification of elicitors of secondary metabolites against C. partellus; Transcriptome analysis of sorghum plants infested with C. partellus.	11.27. 2015 - 11.26. 2018
ICRISAT	Shared Industrial-scale Low-density SNP Genotyping for CGIAR and Partner Breeding Programs Serving SSA and SA (Funded by Bill and Melinda Gates Foundation)	CGIAR	Nil	Nil	Nil		CGIAR breeders are routinely using SNP markers in their breeding programs in forward breeding to increase the efficiency of breeding and the rate of genetic gain they deliver to smallholder farmers. A shared high-throughput SNP genotyping service at ICRISAT is provided for and overseen by CGIAR breeding programs, allowing DNA samples to be extracted and 5 SNPs per sample assayed for \$1, with data returned within 3 weeks of sample receipt, on a full cost recovery basis	11.12. 2015 - 12.31. 2017

						<p>Commercially-managed SNP genotyping service at ICRISAT is established and delivering SNP genotypes for \$.08 per data point for lots of at least 1500 samples</p> <p>DNA extraction facilities at ICRISAT, CIMMYT, IRRI, and IITA established and extracting DNA for \$.50 per sample</p> <p>LIMS system linking the genotyping service, DNA extraction facilities, and breeding informatics systems established and operational</p> <ul style="list-style-type: none"> - Demand of CGIAR breeding programs aggregated, sample submission coordinated for maximum efficiency, and rapid data return provided. At least 15 million data points returned in the second year of the project, with credible plans for 25 million in the third year of the service - A user-led steering committee monitors service levels, coordinates sample aggregation, and fosters continuous improvement in operation and use of the service. - The HTPG and CGIAR breeding programs manage sample aggregation and submission through close and continuous coordination - CGIAR breeding programs are routinely using SNP markers in forward breeding Diagnostic assays are identified or designed for each crop - CGIAR breeders optimize breeding pipelines taking advantage of the availability of low-cost SNP genotyping to increase selection intensity and accuracy SNP markers are used routinely in 	
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							forward breeding by CGIAR breeding programs	
ICRISAT	To Support ICRISAT's Research Capacity in Grain Legumes - USAID	CGIAR	Nil	Nil	Nil			01.01.2015 - 12.31.2016
ICRISAT	Assessment of Technical Designs and Developing Environment Matrix for Works under MGNREGA	GIZ, New Delhi	Nil	DoA, Govt of AP, Govt. of Chattisgarh, Govt of Rajasthan	Andhra Pradesh, Chattisgarh, Rajasthan	Production systems development and management; Protecting the environment/climate change; Saving biodiversity; improving policies; Strengthening NARS	<ul style="list-style-type: none"> • Methodology, design and process of the study were identified and documented; • Socioeconomic, biophysical, and land use data collected and mapped using GIS interface • Impact of MGNREGA interventions on crop productivity, income and environmental services synthesised and documented • Final Impact study report is ready for submission 	11.12.2015 - 05.11.2016

ICRISAT	Agricultural Model Intercomparison and Improvement Project. The Future of Food and Farming in South and Sub-Saharan Africa (AgMIP)	UKaid, United Kingdom	Nil	Tamil Nadu Agricultural University (TNAU), Coimbatore	Tamil Nadu		<p>To advance a second phase of research oriented at delivery of outputs that are demonstrably connected to stakeholder decision areas and priorities. The second phase of AgMIP RRT work will again be overseen by AgMIP Leadership and Coordination headquartered at Columbia University in the City of New York (CU). RRTs will again have work packages that utilize contracts established at ICRISAT.</p> <ul style="list-style-type: none"> • Engage with stakeholders, following protocols developed with the new AgMIP Stakeholder Unit Leaders • Develop 2 RAPS, 1 optimistic and 1 pessimistic, specifying associated crop and economic model inputs • Create 2 Adaptation Packages (with a limited set of components) • Incorporate Livestock Model into regional integrated assessment • Document Improvements in 1 Crop Model (e.g., soil carbon, nutrient management, residue management, water management, varieties) • Contribute to and evaluate Impacts Explorer -- Provide well described economic, crop/livestock, and climate data, and Interact with stakeholders to enhance usefulness • Engage with stakeholders following new protocols • Advance to full Regional Integrated Assessments • For nations in their project area, engage with Stakeholders on assessment questions. • Prepare first stage of national assessment to include 	10.01.2014 - 03.31.2017
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							<ul style="list-style-type: none">o structure of assessment (e.g., regions, commodities)o climate/crop/economic datao scenarios and RAPs (done with Global AR6 Team)o models	
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ICRISAT	Genomics-assisted breeding for high yielding and climate resilient pigeonpea varieties/hybrids and promotion of best suitable cultivars for food and nutritional security in Karnataka state of India	Watershed Development Department, Ministry of Agriculture, Government of Karnataka	CRP-GL, ICRISAT	University of Agricultural Sciences- Raichur, Raichur, Karnataka, India	Karnataka	Increasing productivity	<ol style="list-style-type: none"> 1. Identification and enhancing adoption of farmer preferred cultivars and hybrids 2. Targeted and accelerated breeding for developing fusarium wilt and sterility mosaic diseases resistant cultivars 3. Capacity building through training programs, field visits, electronic and print media and developing basic genomics infrastructure at UAS-R 	2015-2018
ICRISAT	Implementation Phase of the Universities, Business and Research in Agricultural Innovation (UniBRAIN) Project	FARA, Africa		Nil	Africa	Training and Professional Development	<ul style="list-style-type: none"> • Development of sustainability plans for 6 AICCs • Organizing first African Agri-Business incubator network conference in Nairobi • Review and finalization of project completion documents 	2012 - 2015
ICRISAT	MALI Agri Business Incubation Hub	FARA, Africa		Nil	Africa	Training and Professional Development	Help setup a business incubator in Mali with financial support from FARA- UniBRAIN	Jan - Mar 2016

ICRISAT	CRP on Dryland Systems	CGIAR Fund	Nil	1. Krishi Vigyan Kendra (KVK), Rajasthan 2. Accion Fraternal Ecology Centre (AFEC), Anantapur 3. Community Organising for Rural Upliftment Society (CORUS), Kurnool 4. Rural Studies and Developmental Society (RSDS), Kurnool 5. Shri Banashankari Mahila Mattu Makkala Abhivruddhi Samsthe (SBMMAS), Bijapur	Rajasthan, Andha Pradesh, and Karnataka			01.01.2012 - 12.31.2015
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ICRISAT	CRP Policies, Institutions and Markets	CGIAR Fund	CRP Policies, Institutions and Markets	National Center for Agricultural Economics and Policy Research, ICAR, New Delhi; National Institute of Rural Development (NIRD/Hyderabad); Institute of Human Development (IHD/New Delhi); National University of Educational Planning and Administration (NUEPA); Acharya N G Ranga Agricultural University(ANGRAU /Hyderabad); Gujarat Institute of Development Research (GIDR/Gujarat); Centre for Economic and Social Studies (CESS/Hyderabad)	Andhra Pradesh, Telangana, Maharashtra, Madhya Pradesh, Karnataka, Gujarat	Improving Policies; Production Systems Development and Management; Cropping Systems; Livestock Systems	Ex-ante analysis of promising and alternative crop technologies under changing socio-economic and climate change environment; 2. Crop-livestock typologies for India for technology targeting and development planning at district level for dryland agriculture; 3. Better understanding of trends in labor productivity and integration of farm and non-farm activities; 4. Coping strategies related to labor scarcity and to design policies towards improving labor productivity and mechanisation; 5. Developed Innovative tools like 'cultivar specific varietal identification protocols' used to assess the accurate rate of adoption by variety; 6. Impact of improved cultivars over tradition cultivars were quantified and documented for Chickpea in Andhra Pradesh; 7. Assessed the empirical evidence on the efficacy of the social safety net programs to benefit the rural poor in India with a focus on National Rural Employment Guarantee Scheme(NREGS)	01.01.2012 - 12.31.2015
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ICRISAT	CRP on Grain Legumes	CGIAR Fund	CIAT, ICARDA, and IITA	1. Punjab Agricultural University (PAU) 2. Directorate of Groundnut Research (DGR) 3. Indian Agricultural Research Institute (IARI)	Gujarat, Punjab.			07.01.2012 - 12.31.2015
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ICRISAT	CRP on Dryland Cereals	CGIAR Fund	ICARDA	<ol style="list-style-type: none"> 1. Prof. Jayashankar Telangana State Agricultural University (PJTSAU) 2. University of Agricultural Sciences, Bengaluru 3. ICAR-Indian Agricultural Research institute (IARI) 4. ICAR-Indian Institute of Wheat and Barley Research (IIWBR), Haryana 5. ICAR-Indian Institute of Millets Research (IIMR) 6. Tamil Nadu Agricultural University (TNAU) 7. Junagadh Agricultural University (JAU), Gujarat 8. Sri Karan Narendra Agricultural University (SKNAU), Jobner 9. CCS Haryana Agricultural University (CCSHAU) 10. Mahatma Phule Krishi Vidyapeeth (MPKV) 	Telangana, Karnataka, Haryana, Tamil Nadu, Gujarat, Rajasthan, and Maharashtra			07.01. 2012 - 12.31. 2015
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ICRISAT	CRP on Agriculture for Nutrition and Health	CGIAR Fund	Nil	1. Directorate of Groundnut Research (DGR) 2. Tamil Nadu Agricultural University (TNAU)	Gujarat and Tamil Nadu	Production Systems Development and Management	Database on aflatoxin prevalence in groundnut value chains Journal articles on aflatoxigenic fungi characterized in selected areas of India	01.01.2012 - 12.31.2015
ICRISAT	CRP on Water, Land and Ecosystems	CGIAR Fund	Nil	Institute of Development Studies, Jaipur	Rajasathan			01.01.2012 - 12.31.2015
ICRISAT	CRP on Climate Change, Agriculture and Food Security	CGIAR Fund	Nil	Nil	Karnataka and Andhra Pradesh			01.01.2011 - 12.31.2015
ICRISAT	CRP for Genebanks (GCDT thru Bioversity)	CGIAR Fund	Nil	Nil	Nil			2011 - 2015
ICARDA	Development of Lentil cultivar with high concentration of Iron and Zinc	Harvest Plus	CRP A4NH	IARI (New Delhi); IIPR (Kanpur)	Delhi, Uttar Pradesh	Rice-based system	Screening and identification of high Fe and Zn lentil germplasm, development of primary, intermediate and final products;undersand GxE interaction, heritability; fast-tracking and dissemination of biofortified lentils to consumers; degree training of young scientists; publications (journal articles, brochures,)	2008-2018

ICARDA	Development of Lentil cultivar with high concentration of Iron and Zinc	Harvest Plus	CRP A4NH	IARI (New Delhi); IIPR (Kanpur)	Delhi, Uttar Pradesh	Rice-based system	Screening and identification of high Fe and Zn lentil germplasm, development of primary, intermediate and final products; understand GxE interaction, heritability; fast-tracking and dissemination of biofortified lentils to consumers; degree training of young scientists; publications (journal articles, brochures,)	2008-2018
ICARDA	Increasing food legumes production by small farmers to strengthen food and nutrition security through adoption of improved technologies and governance within south-south cooperation	OCPF, Morocco	CRP Dryland Systems	ICAR-NEH (Agartala); KVK (Dhalai); MESADM (Kalyani); Bolpur Manab Jamin (Birbhum); RAKCoA (Sehore); UBKV (Cooch Behar); BCKV (Nadia); TSRD (S-24 Parganas)	Tripura, West Bengal, Madhya Pradesh	Rice-fallow and rice-based systems	Quality seed production of farmer-preferred varieties of lentil, grassea, Kabuli chickpea; empowerment of farmers, establishment of Village-seed Hubs, women training on processing, value addition	2012-2017
ICARDA	Global Alliance for Improving Food Security Nutrition and Economic Growth for the World's most Vulnerable Poor	CGIAR Fund	CRP Dryland Cereals	IIWBR, Karnal	Haryana, Rajasthan, MP, UP, Uttarakhand	Semi-arid dryland systems;	Identification of barley lines for feed. Food and malt; out-scaling of released varieties of barley; heat tolerant and rust resistant genotypes	2013-2016

ICARDA	Managing agricultural production systems in low rainfall regions of India for sustainable livelihoods	CGIAR Fund	CRP Dryland Systems	CAZRI (Jodhpur)	Rajasthan	Silvi-pastoral; khadin systems	Reseeding (grasses) Shrub/tree transplantation Water harvesting Rational grazing Rotational grazing (division parcel into paddocks)	2014-2016
ICARDA	Establishment of ICARDA-India Research Platform focusing on Food Legumes	CGIAR Fund	CRP Grain Legumes and CRP Dryland Cereals	RAKCoA, Sehore; JNKVV (Jabalpur); DWR (Karnal); IIPR (Kanpur) and all pulses research institutions in India	Madhya Pradesh, Haryana, Uttar Pradesh, West Bengal, NEH region	Cereals, food legumes, fodder	Productive lentil, Kabuli chickpea, grasspea, barley, durum wheat lines identified. Establishment of Cactus nursery	2014-2044
ICARDA	GoK-CGIAR under the Bhoochetana Plus Initiative (ICARDA is a partner on Lentil and Cactus components)	State Govt. of Karnataka	CRP Dryland Systems	UHS (Bagalkot); State Govt. of Karnataka	Karnataka		Improved lentil varieties; seed hubs; cactus nursery development and distribution to farmers in 8 districts of Karnataka; reports and brochures	2014-2017
ICARDA	Utilizing Chickpea Genome Sequence for Crop Improvement	ICARDA-ICRISAT-NFSM	CRP Grain Legumes	BCKV (Kalyani)	global	cereal-based systems	Phenotyping of 3120 chickpea germplasm, and identification of desirable lines; publications	2014-2017
ICARDA	ICAR-ICARDA-NFSM projects on:	NFSM, DAC, Govt. of India		AAU (Jorhat); State Dept. of Agriculture (Tripura); ICAR	Assam, West Bengal, Tripura,	Cereal-based systems	1) productive lentil varieties to reduce yield gaps, identification of appropriate lentil varieties for rice-fallows.	2013-2016

	<p>1) Enhancing lentil production in Eastern and North-eastern states for nutritional security and sustainable rice-based production system in India</p> <p>2) Generation advancement and development of new genotypes through pre-breeding in lentil and Kabuli chickpea</p> <p>3) Enhancing Grasspea production in Eastern and North-eastern states for animal feed, safe human food and for sustainable rice-based production system in India</p>			<p>Research Complex (Meghalaya); ICAR Research Complex (Manipur); BAU (Sabour); IIPR (Kanpur); MESADM (Kalyani); PORS (Berhampore); IARI (New Delhi); PAU (Ludhiana); MPKV (Rahuri); NBPGR (New Delhi); RAKCoA (Sehore); IIPR (Kanpur); HAREC (Dhaura Kuan); IGFR (Jhansi); IGKVV (Raipur); State Dept. of Agriculture (Chhattisgarh); UBKV (Cooch Behar)</p>	<p>Meghalaya, Bihar, Uttar Pradesh, Delhi, Madhya Pradesh, Himachal Pradesh, Chhattisgarh</p>		<p>Establishment of village Seed hubs; capacity development of farmers on quality seed production and women in processing and value addition. 2) Identification of parents from wilds and primitive landraces, development of populations and new pre-bred lines developed and shared with NARS partners.3)low-ODAP grasspea lines are adopted by farmers in rice fallows, fodder varieties identified; publications;</p>	
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ICARDA	<p>ICAR-ICARDA Collaborative Research Projects under ICAR-ICARDA workplan 2014/15-2016/17:</p> <p>1) Development of improved plant type of lentil rich in micro-nutrients for short-season environments</p> <p>2) Development of small-seeded and extra short-duration lentil varieties suitable to rice fallows as relay (zero tillage) and sole crops in new niches of rice-based cropping systems</p> <p>3) Identification of resistance genes in lentil by association mapping and bi-parental analysis</p>	DARE/ICAR, Govt. of India		<p>IIPR (Kanpur); GBPUA&T (Pantnagar); CSKHPKVV (Dhaulakuan & Palampur); RVRSKVV (Sehore); JNKVV (Jabalpur); NDUA&T (Faizabad); IARI (New Delhi); VPKAS (Almora); TCA Dholi (Bihar); PORS, BCKV (W.B.), RAK College (Sehore); ICAR-Tripura, IGKVV (Raipur); RAU (Pusa, Bihar); CSKHPKVV (Dhaulakuan & Palampur); PAU (Ludhiana); UAS (Dharwad), ARS (Gulbarga); IGFRI (Jhansi); RPM College (Uttarpara); ICAR Research Complex (Patna); ICAR NEH (Meghalaya); DWR (Karnal); HAU (Hisar); ARS (Durgapura) DWR (Karnal); HAU (Hisar); CAZRI (Jodhpur); SKRAU (Bikaner); IIT (Kharagpur); State Dept. of Agriculture (W.B. & Odisha); NGOs</p>	Rajasthan, UP, MP, Chattishgarh, WB, Assam, Bihar, Tripura, Manipur, Meghalaya	Cereal-based systems, arid and semi-arid ecology, crop-livestock system,	Productive varieties of lentil, faba bean, Kabuli chickpea, grasspea, barley, wheat, cactus fodder and forage species identified; develop new genotypes and share with Indian partners; validation of CROPSYST model; rice-fallow mapping in WB and Odisha; pulses market chain defined; markers for desirable traits in lentil identified	2014-2017
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	<p>4) Development of large-seeded, extra short duration Kabuli chickpea varieties with resistance to wilt and Ascochyta blight and tolerant to drought and heat stresses</p> <p>5) Development and evaluation of high yielding low-ODAP grass pea varieties adapted to rice based cropping systems for food and fodder</p> <p>6) Development of high yielding, multiple disease resistant and drought tolerant Faba bean (<i>Vicia faba</i> L.) varieties in India</p>							
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	<p>7) Development of high yielding barley genotypes for malting, food, feed and dual purposes for different agro-ecological conditions of India</p> <p>8) Diversification of germplasm and Genetic enhancement of wheat for biotic and abiotic stress tolerance and grain quality</p> <p>9) Community based rangeland management for livestock production in low rainfall regions of India</p> <p>10) Assessing adaptability and utilization potential of Opuntia ficus-indica in arid and semi-arid regions of India</p>							
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	<p>11) Improving crop and water productivity in Indira Gandhi Canal Command Area (Second Phase)</p> <p>12) Quantification of rice fallows for agricultural intensification and diversification in India</p> <p>13) Enhancing fodder and nutritional security of livestock in semi-arid regions of India through Opuntia, Lathyrus and Vicia sps.</p> <p>14) Resource use efficiency and enabling policy options to improve the livelihoods of rural communities through pulse production in India</p>							
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Bioversity							<ul style="list-style-type: none"> · Training course in Citizen Science for India 	
	Outscaling a citizen science approach to test climate adaptation options on farm	CCAFS/CRP 7	Bioversity International	ICAR, SAUs, KVKs, NGOs	Bihar, Uttar Pradesh, Madhya Pradesh, Chhattisgarh	Rice and wheat farming system with focus on small and marginal farming	<ul style="list-style-type: none"> · Learning on design of crowdsourcing experiments -- outscaling model · Establishment of national or regional consortium/platform for Citizen Science for SA · Development of data collection application and database development for crowdsourcing · House hold food and nutrition security achieved through crop diversification 	5 years (2014 – 2018)
Bioversity	Mainstreaming agricultural biodiversity conservation and utilization in agricultural sector to ensure ecosystem services and reduce vulnerability	Global Environment Facilities (GEF)	CCAFS and DCL Bioversity International and ICRISAT	ICAR, PPV&FRA, SAUs, KVKs, NGOs	Rajasthan, Uttarakhand, Himachal Pradesh, Madhya Pradesh and Chhattisgarh	Subsistence agricultural	<ul style="list-style-type: none"> · Adaptive management of crop diversity for resilience agriculture and improved livelihood in place. · Strategies and policies for sustainable conservation and use of crop diversity, including access and benefit sharing recommended. · Improved agricultural support system, institutional frame work and partnership that support crop diversity on farm strengthened. 	Five years (2016 – 2020)
Bioversity	Reinforcing the resilience of poor	IFAD and EU	CCAFS and Bioversity			Subsistence	<ul style="list-style-type: none"> · Red list of species and varieties documented 	Three years

	and communities in the face of food insecurity, poverty and climate change through on-farm conservation of local agrobiodiversity		International	NGOs (MSSRF, ASA and Gene Campaign)	Tamil Nadu and Madhya Pradesh	agriculture	<ul style="list-style-type: none"> Documentation system for on farm conservation Farmers trained for millet cultivation Custodian farmers network established Ex situ - in situ linkages established Value-added products for improved livelihood. 	(2014 - 2016)
Bioversity	Community seed banks for safe seed storage at village level	ICAR	Bioversity International CCAFS	ICAR, SAUs, NGOs, KVKs	All over India	Subsistence agriculture	<ul style="list-style-type: none"> Dry storage technology for long-term storage developed and applied Community seed banks established to facilitate small and marginal farmers for their safe storage Farmers trained in quality seed production and storage at community and house hold level. 	Five years (2015 - 2019)
CIP	Exchange of genetic resources from CIP-Lima (Potato/SP)	ICAR	RTB CIP	ICAR/ CPRI, AICRP-Shimla,	All States	Cereal (Rice/wheat) based system in sub-tropical lowlands, Plateau region, Highlands	Breeding & Data management	Ten year (2008 - 2018)

CIP	Development and evaluation of potato varieties with improved tolerance to heat, drought stress and viruses in different agro-ecologies: Hybridization, clones' evaluation and multilocation testing in different agro-ecologies s.	ICAR	RTB CIP	ICAR/ CPRI, AICRP-Shimla, ITC, PepsiCo, Agricultural /Horticultural Universities, State Department of Horticulture and Agriculture: Karnataka, Maharashtra, Haryana, West Bengal, KVK-Naryanagaon, Maharashtra	All States	Cereal (Rice/wheat) based system in sub-tropical lowlands, Plateau region, Highlands	Early maturing varieties developed for table potatoes. Heat and drought tolerant varieties developed for arid and semi-arid agro-ecologies. Varieties with processing qualities developed for farmers to get remunerative prices of their produced	Seven Year 2014-2020
CIP	Introduction of potato as a high value crop in the DS (Dryland system) in Rajasthan as an innovation to improve household incomes, enhance food security, and promote women participation in farming activities	DS (CRP1.1) ICAR	RTB, DS/ CIP	ICAR/ CPRI, AICRP-Shimla, ITC, PepsiCo, Department Agricultural /Horticultural, Rajasthan.	Rajasthan	Cereal based system in dry-land agro-ecology.	House hold income, food and nutrition security achieved by introducing potato in the farming system of dryland. Potato value chain introduced for easy availability of quality seed and marketing produce at farm-gate.	Five Year. DS (CRP1.1) ICAR and expected funding from Government of Rajasthan
CIP	Developing farmer's based sustainable potato seed systems in non-traditional	ICAR, RTB	RTB, CIP	ICAR/ CPRI, ITC, Agricultural /Horticultural Universities, Shimoga, State Department of	Maharashtra and Karnataka	Cereal-based system in semi-arid agro-ecology of	Existing potato seed system and marketing chain documented. Areas with low aphid population (below threshold level) identified for quality seed production	Seven year 2014-2020

	seed producing region to benefit farmers of plateau region by making available locally produced quality seed at lower price than seed imported from North India.			Horticulture and Agriculture, Karnataka and Maharashtra, KVK-Naryanagaon, Maharashtra		plateau region.	Public-private partnership developed to increase seed production and availability. Non-traditional areas brought under potato cultivation in plateau region. Local potato growers have sufficient locally produced quality seed available at adequate prices to meet between 30-40% seed requirement of about 10,000 farming families by 2020.	
CIP	Sustainable intensification of potato in rice-based systems in Odisha for increased productivity and profitability	Government of Odisha	RTB, CIP	Department of Horticulture, Government of Odisha (GoO), Odisha Agricultural and Technology, University, Central Potato Research Institute (CPRI), Shimla, private sector	Odisha	Rice-based systems in Sub-humid agro-ecology	Potato farmers in the rice-based system will be the project's direct beneficiaries. Higher and more stable potato yields, increased income from systems and increased food security are anticipated, through the production of quality formal and informal seed locally by introducing improved seed potato production technologies and strengthening the capacity of extension workers, researchers and farmers. The availability of seed of heat tolerant and short duration varieties will bring non-traditional area under potato production. The GoO will minimize the revenue spent on importing seed and ware potatoes from other parts of the country.	Five year 2016-2020
CIP	Generating Advances in Incomes and Nutrition through Sweetpotato (GAINS)	Government of Odisha	RTB,CIP	Directorate of Horticulture, Government of Odisha (GoO), Odisha, ICAR institutes (CTCRI, CHES) and ICRISAT	Odisha	Sub-tropical lowland, humid systems	<i>Capacity strengthening:</i> At least 3,000 farmers, women, and youth trained on various aspects of sweetpotato production and utilization. Depending on the average land-holding pattern of the	4 years 2013-2017

							<p>local farmers, the area of cultivation/expansion could be assessed.</p> <p><i>Access to improved varieties:</i> Planting materials of improved varieties are available, in desired quantity and quality, to at least 80% of sweetpotato farmers.</p> <p><i>Crop production:</i> Sweetpotato production area and volume in tribal communities increased 80% in five years.</p> <p><i>Crop performance:</i> On-farm yield average of sweetpotato and other crops increased 25%.</p> <p><i>Household income:</i> Contribution of sweetpotato livelihoods (production-utilization) to overall household income increased by 50%.</p> <p><i>Food consumption:</i> Year-round sweetpotato availability and consumption rate per capita increased 100%.</p> <p><i>Nutritional well-being:</i> At least 1,500 women and children met RDA for micronutrients, through consumption of sweetpotato and other nutritious food crops.</p>	
CIP	Exchange of genetic resources from CIP-Lima SP	ICAR	RTB CIP	ICAR/ CTCRI, AICRP-Tuber Crops Trivandrum	All States	sub-tropical lowlands	Breeding & Data management	Ten year (2008 - 2018)

IWMI	Basin Scale Hydro-economic (WEEF)	WLE	IWMI		India (Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, West Bengal, Haryana and Himachal Pradesh)	Water-Food-energy nexus systems	<ol style="list-style-type: none"> 1. Report/Publication on hydro-economic modelling in Ganges 2. Report/Publication on water-energy-food framework at basin scale 3. Hydro-economic model for Ganges 	2015-2016
IWMI	Canal Performance Drivers	WLE	IWMI		India (Maharashtra)	Irrigated agriculture systems	<ol style="list-style-type: none"> 1. Draft Review Report 2. Capacity building jointly with WALMI 3. Data collection on benchmarking indicators 	2013-2016
IWMI	Ecosystems and urban development India and Nepal	DFID and WLE	IWMI	University of Sussex (UoS), UK, Jawaharlal Nehru University, Benares University and Toxicslinks, India	India (Karnataka, Uttar Pradesh, Delhi, Telangana) Nepal, Kathmandu Bangladesh, Dhaka	Urban and Peri-urban Agri-Ecosystems	<ol style="list-style-type: none"> 1. Spatial and temporal maps of ecosystem services and poverty for six cities – Delhi, Varanasi, Bangalore, Hyderabad, Kathmandu and Dhaka 2. Water yield models for 5 cities - InVEST modelling 3. 2 journal articles on spatio-temporal analysis of Ecosystems services and multi-dimensional poverty 4. 2 policy briefs to address peri-urban ecosystem services and poverty alleviation 	2014 - 2016
IWMI	Restoring the Ganges – Healthy rivers	WLE	IWMI	Institute of Rural Management Anand-(IRMA), World Wide Fund for nature-India (WWF-India), Indian Institute of Technology-Kanpur	India (Uttar Pradesh, Uttarakhand)	Ganges basin	<ol style="list-style-type: none"> 1. Integrated baseline assessment in the Upper Ganges 2. Cost-benefit and trade-off analysis of e-flow implementation in the Upper Ganges 3. Agreed e-flows implementation framework 4. Integrated baseline assessment of the selected cities 5. Catalogue of stakeholder recommended solutions for pollution abatement in the selected cities (including RRR business models) 	2015-2016

							<ol style="list-style-type: none"> 6. Feasibility studies of the most promising solutions in the selected cities 7. Assessment of the replication potential in the Upper Ganges 	
IWMI	GW-Recharge & Management	WLE and ACIAR	IWMI	MP University of Agriculture Technology, Vidya Bhavan Krishi Vidyan Kendra (VBKVK), Development Support Centre (DSC)	Rajasthan, Gujarat	GW irrigated agriculture systems	<ol style="list-style-type: none"> 1. Review of past MAR and WSD programs in Gujarat and Rajasthan, but also to include lessons from similar regions) 2. Modelling groundwater dynamics and water quality interactions 3. Demand management strategies for securing irrigation water supplies 4. Generic Indicators and framework for MAR impact assessment in semi-arid regions. 5. A strategy for wider application of learnings from the project and up-scaling project outcomes, including identification of suitable pathways to enhance MAR 6. BPG to design and install MAR structures at village scale. 	2011 - 2016
IWMI	IWMI-INDIA Water Policy Program	SRTT, WLE	IWMI	NGOs and Research Institutes in the study sites.	Gujarat, Karnataka, Jammu and Kashmir, Punjab, Rajasthan, Maharashtra, Madhya Pradesh, Telangana, Andhra Pradesh, Jharkhand, Odisha, Tamil Nadu and Bihar	GW irrigated agriculture systems	<ol style="list-style-type: none"> 1. Initiate a Visiting Fellows program for practitioners; and host scores of Masters' and PhD student interns 2. Policy Briefs targeted at policy makers in the government, NGO leaders and donor organizations 3. international peer-reviewed journals and articles 4. Water Policy Research Highlights & Comments 5. Dissemination materials and workshops – training tools, videos 	2014-2018

IWMI	Irrigation-hydropower nexus in Ganga headwaters	WLE	IWMI	University of Arizona - USA People's Science Institute - Dehradun University of Delhi International Centre for Integrated Mountain Development - Kathmandu	Uttarakhand, India	Irrigated agriculture systems and hydropower	<ol style="list-style-type: none"> 1. Data and information on present status of natural resources, disaster risk, ecosystem services, and livelihood vulnerability in Bhilangana River Basin 2. Research papers & conference presentations on research findings 3. Book chapter (Earthscan) 4. Scientific papers in preparation 5. Policy briefing notes and technical summaries of research including recommendations 	2015-2016
IWMI	Poverty squares and gender circles	WLE	IWMI	Nepal Madhesh Foundation, Bangladesh Agricultural University, North Bengal University, South Asia Consortium for Interdisciplinary Water Resources Studies, Katalyst	The Eastern Gangetic plains (Nepal Terai, Eastern India and Bangladesh)	Agriculture systems	<ol style="list-style-type: none"> 1. Gender-Ecosystems Resilience Framework developed and in use by project partners. 2. Gender, agriculture and equity teaching modules being developed for partner university (North Bengal University, Siliguri, WB) 	2015-2016
IWMI (component)	GW and micro-irrigation in Karnataka	Government of Karnataka and WLE	ICRISAT led CG consortium	Karnataka state government departments	Karnataka	Agriculture systems	<ol style="list-style-type: none"> 1. Rapid Assessment Survey 2. Capacity building program on micro-irrigation (MI) in selected villages 3. Piloting the MI and progress Review 4. Drip Policy document <p>capacity building report</p> <ol style="list-style-type: none"> 5. MI operation manual 6. Fertigation schedules for crops 	2013 - 2017

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