THE NEW DELHI CHARTER - 2012

The Outcome of the

INTERNATIONAL CONFERENCE

On

Climate Change, Sustainable Agriculture & Public Leadership

7 – 9 February, 2012 – New Delhi

Part – I : BACKGROUND

The Indian Council of Agriculture Research (ICAR), Ministry of Agriculture and National Council for Climate Change, Sustainable Development & Public Leadership (NCCSD), organized the International Conference on Climate Change, Sustainable Agriculture and Public Leadership over 7 – 9 February, 2012 at the National Agriculture Science Complex, New Delhi, India, in response to a felt need to develop a larger framework programme to address the immediate and long-term needs not only for India but also for developing countries to meet the challenges emerging from climate change on Agriculture, Environment, Water sectors and related areas that determine productivity and sustainable development.

This was to:

- Highlight positive role that agriculture plays and to give it significantly higher levels of importance as a means of tackling the impacts, as it has significant natural process of photosynthesis that utilizes carbon dioxide and release oxygen and if used appropriately, agriculture can reduce increased Co2 level from atmosphere. If adequate importance is not given to agriculture, its productivity may suffer resulting into problems of food security and inability to tackle the situation of increased poverty with a cascading negative effect on the rural economy creating social turmoil.

- Mainstream agriculture as an integrated mitigation tool due to its link with water, soil and nutrient management with implications for comprehensive biodiversity management and eco-agriculture.

- Strengthen involvement of public leadership, elected and non elected members of public governance system and future generation through appropriate institutional mechanism.

About 400 participants/stakeholders deliberated in the Conference. This included students, farmers, emerging young members of Panchayati Raj system and cooperatives, agriculture scientists, scholars, entrepreneurs, ngos, government official, representative from Banks, farmer's organizations, National-International organizations like ICRISAT, FAO, IFAD, ICARDA, WFRI and representative from Embassies of Spain, China, Indonesia, Vietnam, Kenya, Germany, USA, UK etc, supported by many eminent scholars and distinguished scientist and public leaders from India and abroad.

Part – II : PREAMBLE

Climate change as a phenomenon is being understood in terms of natural variability and as a consequence of human activities. Either way, the climate system is extremely complex and our understanding of the dynamics and causes is only rudimentary and emerging. This is notably so in terms of the extent, timing and impact. Thus, the knowledge and understanding of implications of climate change at the national level is inadequate and fragmentary. However, the importance and significance of vulnerability of natural and human systems to climate change and adaptation to such changes is increasingly being realized.

According to Intergovernmental Panel on Climate Change (IPCC) and World Meteorological Organization, climate change can adversely impact global environment, agricultural productivity and the quality of human life. More importantly in developing countries, it will be difficult for farmers to carry on with farming activities under increased temperature conditions. Such countries, much as India is, are highly vulnerable to climate variability and change as farming depends largely on the timing of the rains and quantum of rain in a timely manner.

Fluctuations in areas planted with arable crops and annual yield are directly related to climate conditions and notably to rain and rainfall patterns. Recognizing this, it is necessary that India should address the issue of climate change and tackle present and emerging challenges on a priority basis. This in turn will adversely affect food security, economic activity, human and animal health, water resources and biodiversity. Hence, the main objective of this international conference was to bring scientists, teachers, researchers, economists, managers and policy makers from around the world to discuss various aspects of remedial and preventive management by involving all stakeholders including public leadership both elected and non-elected members of public government system.

The conference received an overwhelming response. The organizers received more than 150 abstracts on different themes from all over the world. They were reviewed by relevant subject experts and those considered fit were accepted for publication. A special session on "Experience Sharing through a Participative Approach for Mitigating Adverse Impact of Climate Change & Public Leadership and Policies" was a special aspect of the Conference. The other technical sessions were Climate Resilient Agriculture, Environmental Degradation & Conservation Agriculture, Forecasting & Simulations, Socio-Economics, Policy & Public Leadership, Agroforestry & Allied Systems and Animal Science, Fisheries & Allied Sectors. The outcome of this International Conference will hopefully flag the way for sustainable agriculture to help the farmers' tackle the climate change related crisis.

Part – III : INITIATIVES

Deliberations at the conference were enriched with the participation of technical experts, decision makers in the government, financial institutions, and practitioners from several countries, in addition to students, researchers and industry. This included such International agencies as the IFAD, the Food and Agriculture Organization, the ICARDA and the ICRISAT. Representatives from the embassies of Indonesia, Vietnam, Germany, China and Kenya too were present. Civil society organizations and farmers too lent their perspectives on these aspects. The conference was supported by the ICRISAT, the Planning Commission of the Government of India, Vigyan Prasar of the department of Science and Technology, Government of India and the National Bank for Agricultural and Rural Development, India.

The Conference took note of the fact that agriculture world over and India in particular is growing significantly. However, this growth may be influenced by the impacts of global warming and climate change.

- Several policies, plans, programmes and initiatives are being developed in response to this perceived call for action.
- It is, therefore, timely and appropriate to consider this context and the call as an opportunity to develop and implement mutually reinforcing plans, programmes and projects directly relevant at the local level.
- This will also help foster leadership at all levels involving elected and non-elected members of public governance system to guide well informed action centered on agriculture.
- It is only logical that ecologically sound agriculture will deliver such multiple benefits as enhanced productivity, improved management of water, soil and bio resources.

This perspective has enormous implications for a robust public policy to promote expansive agriculture, optimize conservation and productivity gains and minimize externalities simultaneously.

We, the participants of the International Conference on Climate Change, Sustainable Agriculture and Public Leadership:

RECOGNIZE that agriculture is growing significantly and evolved in ways that can effectively target and help tackle persistent challenges inter-alia poverty, ill health, malnutrition and hunger, issues pertaining to energy security, land degradation, loss of bio diversity and climate change with its cross cutting impacts. In this context it is important to re-emphasize the unique capacity of agriculture to absorb Co2 and reduce its level in the atmosphere and simultaneously release oxygen through photosynthesis. This is central to provide food security and sustainable livelihood to growing hungry millions.

This also has enormous implications for agriculture based mitigation and adaptation interventions.

ACKNOWLEDGE the contribution of agricultural scientists, farmer communities, policy makers and the civil society and the challenges faced by small and marginal farmers and landless farm workers in particular,

Are **CONSCIOUS** of the need to assist rapid integration of sustainable and innovative climate resilient agriculture practices keeping in view small and marginal farmers

Are **AWARE** of wide-ranging farm innovations being tested and validated in many parts of the world

Are **ENCOURAGED** by the progress made in modern agriculture particularly in the field of biotechnology, nanotechnology, bio-informatics, agro-forestry, natural resources management and development of human and institutional capacity and the mutually reinforcing formal and informal learning systems at various stages of development and implementation around the world to impart education on recent developments in these and related areas

Are INSPIRED by recent policy developments at global and national levels that recognize the need to enable climate resilient agriculture and initiatives

And **APPEAL** to the international funding mechanisms, governments, communities and leadership to recognize the need to mainstream Agriculture as a key economic activity and support locally relevant mitigation and adaptation action duly considering the national, regional and global significance of climate change and its impact on different ecosystems including agriculture and back this with an integrated policy and programme framework.

We, therefore, unanimously through New Delhi Charter invite parliamentarians, decision makers, financial institutions, academicians and experts in fields related to agriculture and environment to join in and recognize the specific role everyone concerned can play as part of this process. This initiative further recognizes and proposes the need for concerted action to:

- Develop cross-sectoral policies and institutional frameworks to support climate resilient agriculture including agro-forestry, fishery and livestock-based farming systems at the national level considering developmental imperatives and aligned with regional and multi-lateral environmental agreements
- Evolve system–specific market tools/mechanisms that reward farmers and communities for their carbon - efficient action
- Improve farming practices to reduce impacts on the quality and quantity of resources considering the relative contribution of such action to the overall profile of greenhouse gases implicated in global warming and climate change
- Develop agro-meteorological warning systems accessible to the farmers and build their capacities to protect crops from inclement climate related phenomena and impacts including insect infestations, pest dynamics, diseases, etc with implications also at the post – harvest stage to plan appropriate preventive / remediation strategies in the future
- Enhance research on the identification of species for salinity / drought stress tolerance and productivity enhancement, maximum Co2 absorption, judicious use of biotic and abiotic resources and value addition to products at all levels and ensure that productivity is enhanced.
- Consolidate learnings into a well structured body of knowledge particularly for the benefit of the farming communities; relating successes, limitations of experiences and practices to strengthen livelihood options and enrich perspectives to enable local level decisions / actions.
- Reinforce outreach using diverse ICT tools, and build capacities through value added contents to enable timely interventions duly recognizing the rich and significant knowledge and experience communities have to tackle adversities and integrate with the expertise of scientists and initiatives of the government and NGOs. This can be strengthened on the principles of knowledge economy to optimize knowledge output and applications that are locally relevant.
- Introduce a dynamic extension approach to reach out to farmers at their doorstep prior to sowing operations, along with information related to market demand, market price, access to quality inputs and equipment and insurance/safe guards against spurious supply of seeds/ fertilizer/pesticide/equipment

- Popularize development of climate resilient agriculture through an integrated, interdisciplinary, multi-institutional and multi-stakeholders and concerted approach
- Strategically position Climate Resilient Integrated Farming Systems as an important area of investment for small and marginal farming community, land rehabilitation, biodiversity conservation, climate change mitigation and adaptation and improved food and nutritional security.
- Enhance public and private investment on value addition to agricultural products, innovations and initiatives including research, education and development of Wasteland, Wetlands and degraded areas, river basin projects and such unique systems that can strengthen resilience.
- Promote agro-ecology and biodiversity including locally adapted vegetation to optimize productivity. This has to be complemented with integrated waste treatment systems for value added energy benefits (Community Biogas systems). Equal importance has to be on promoting locally adapted original breeds of animals/livestock/fisheries.
- Prevent back sliding of the already sub–optimal growth of agriculture and of the condition of small farmers. The latter should be protected from sliding further below the poverty line, because of the implications on social turmoil and quality of life. It is essential to therefore strengthen such community centered democratic systems as the Panchayat Raj in India and other comparable institutions in countries with similar contexts of development and institutional mechanisms.
- Foster and strengthen leadership traits of elected and non-elected leaders in communities and youth in particular to play well informed and goal oriented roles to address challenges related to food security, development, natural resource management and climate change together, as interlinked issues, through a farmers-first framework.
- Lobby to prioritize and mainstream agriculture and the interests of farmers in all policies, plans, programmes and projects for implementation of the above stated approach.
- Expand choices available to women, landless farm workers and other vulnerable groups to further increase their access to land and crop / tree-based products and services.
- Coalise at the local level and develop an International Consortium for collective action to mainstream agriculture as the integrated mitigation and adaptation tool for sustainable development and to tackle the present and emerging challenges posed by climate change, duly recognizing the diverse initiatives already in progress
- Introduce scientific agriculture practices based on soil health and moisture analyses and provide appropriate information in a timely manner on a crop-specific basis so that farmers can act in a well informed manner considering their specific requirements.
- Introduce special measures to promote Agriculture in urban areas/industrial estates for enhanced vegetation cover etc.

Part – IV : RESOLVED

The distinguished participants at the International Conference on Climate Change, Sustainable Agriculture and Public Leadership unanimously resolved to take steps aligned with the New Delhi Charter.

Importantly, the Conference recognized the fact that, sustainable agriculture signifies the means and the ends in this process in the context of climate change.

The New Delhi Charter on Climate Change, Sustainable Agriculture and Public Leadership has been unanimously adopted.

Resolved that this should be widely circulated to all the national and international organizations and esteemed member states of the FAO of the United Nations with a request to accept and implement the recommendations to achieve the goals of sustainable agriculture, relevant for the whole of human civilization.

Resolved that International negotiations on Climate Change may take note of the urgent need to mainstream / strengthen agriculture as a integrated tool to mitigate impacts of Global Warming and suitably adapt through appropriate and sustainable livelihood and food security measures.

Further, resolved that each one will act spontaneously in furtherance of the above stated, jointly and individually and not wait for the other to initiate.

New Delhi, India
February 9, 2012

Adopted unanimously

Part – V : EXTRACT OF KEY SPEAKERS DURING CONFERENCE:

Ecological security and food security are inter-dependent. A holistic approach keeping in mind their interdependency is required to ensure sustainable agricultural production systems all over the world. It is time to focus on mainstreaming agriculture as an integrated mitigation and adaptation option to provide sustainable livelihood for the millions engaged in agriculture ***- H.E Smt. Pratibha Devisingh Patil,*** *The President of India*

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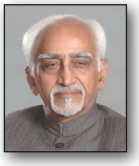

Under the scenario of climate change holding this International Conference on Climate Change, Sustainable Agriculture and Public Leadership is a very timely activity. Hopefully, this will address important issues like climate resilient agriculture, use of biofertilizers and eco-friendly technologies for sustainable agriculture. I am sure the Conference will also help in enhancing livelihood security of the resource poor farming community ***- H.E. Shri M. Hamid Ansari,*** *Vice-President of India*

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Global climate change is of major concern among the developed as well as developing countries. The impact of climate change on our environment, resources and society with its likely impact on a wide range of ecosystems and sectors such as water and soil resources, agriculture, forestry, energy, transport and all the ecosystems, etc., have already become issues of vital concern both nationally and internationally. Government of India has initiated series of measures in this regard. I am sure its impact will be discussed and deliberated to bringing out more comprehensive policy frame work and Implementable projects to reach out all our farmers in every village of our country ***– Hon'ble Dr. Manmohan Singh,*** *The Prime Minister of India*

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I recognize the importance of this Conference especially when our country is preparing to articulate plans for management of impacts of climate change. India is taking active strides to empower her citizens with appropriate messages and technical capacity building evident through the missions to tackle climate change impacts without losing site of developmental needs. Lessons from India's insights are useful also for countries with comparable contexts of development. Deliberations worldwide including of the Consultative Group on International Agricultural research are also aimed at positioning agriculture appropriately in the climate change arena. There is an emerging consensus that agriculture can deliver mitigation and adaptation benefits through its cross cutting influence on water, soil and bio resources management. This is however a function of its photosynthetic potential and related eco system roles. My perspective is of a legal specialist motivated by principles of equity, justice, preventive action and remediation. I am aware of the challenges in deriving the best out of collective action on the basis of these principles in the management of global commons. These values are critical to ensure holistic

and sustainable development across countries. Agriculture becomes an important focal point in this context especially when the farmer has to face the challenges caused by externalities, a major portion of which is generated by others. It is therefore critical to reduce the spread and depth of uncertainties farmers face while grappling with the problems posed by changing climate. This will in turn generate a portfolio of locally feasible interventions for improved management of natural resources. Productivity related viability of farms is a pre-condition for climate friendly farming. Some of the manifestations of such an improved management can be recruitment of larger tracts of land for cultivation, improved productivity through judicious use of water and biological resources followed by a wider gamut of livelihood options ***- Justice B. P. Singh,*** *Former Judge of Supreme Court of India / President of NCCSD*

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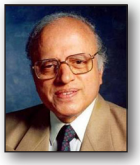

The deliberation of international and national expertise is sure to generate more fruitful solutions to the global problems which are threat to the humanity. In this knowledge management world, this will surely enhance the welfare of the society at large. Knowledge is a continuum and we should respect both indigenous knowledge and frontier science. This is more relevant to agriculture which has to strive for the food security and sustainability of natural resources, which depend on a combination of ecological prudence of the past and technological advances of today and tomorrow. I am sure that with concerted efforts of all stakeholders, we will be able to overcome this challenge and the deliberations of the conference will lay a path way for such efforts ***- Prof. M. S. Swaminathan***

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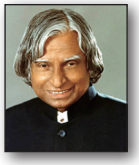

Global warming has been occurring at higher than the normal rate and is likely to continue in future as per IPCC prediction. It will affect Indian Agriculture adversely and the uncertainty of changes in weather is also likely to increase with time. To provide food, nutrition and livelihood security to the billions, it is essential to initiate short term and long term strategies so that the agricultural production system is geared to meet the challenges most appropriately ***- Respected Dr. A.P.J. Abdul Kalam***

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Sustainable agriculture has a strong linkage between the socio-cultural and principles of scological economics in natural resource management. Land, water and Vegetation are vital ecological components of our socio-economic system and mainstay of Indian agriculture. India has a total geographical area of 329 Mha which is 2.3% of the world's land area. Out of which, about 120 Mha is suffering from various forms of land degradation. Likewise, total water resources of India have been estimated to be 1869 billion cubic meter (4% of global water resources) and presently agriculture consumes about 80% of available water. The growing population and competing demands of water are projected to reduce the share of water diverted to agriculture in future. The challenge, therefore, is to produce more for growing population with

limited water availability, shrinking land resources, declining factor productivity and under new threats of climate change affecting water resources availability and their distribution. ***Hon'ble Shri Sharad Pawar,*** *Union Minister of Agriculture*

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You will agree that climate is central to many critical agricultural decisions ranging from farm to policy level. It is also imperative to realize that most of these decisions have to be made well in advance to counter the impacts of climate change at the earliest. At this conference we are expecting this meet on "Climate Resilient Sustainable Agriculture through Public Leadership to (i) Develop programs and policies that increase farm productivity and incomes (ii) Make agriculture climate resilient and promote stability and security for the farmers (iii) Ensure that the agriculture sector becomes a part of the solution to the climate change problems rather than the cause ***– Hon'ble Shri Harish Rawat,*** *Minister of State (Agriculture), Govt. of India*

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Global climate change is of major concern among the developed as well as developing countries. The impact of climate change on our ecosystems and sectors such as water and soil resources, agriculture, forestry, energy, transport and all the ecosystems, etc., have already become issues of vital concern both nationally and internationally. There has been a noticeable increase in extreme weather events during last decade particularly rise in temperature and aberration in rainfall leading to frequent floods and drought events. These events will have an adverse impact on the agricultural productivity including livestock and fisheries. For instance, about 6-10% decline in rice yield has been estimated with an increase in air temperature by 1°C and also for the other crops such as wheat, corn, etc. The Conference is also attempting for a `Policy Document' highlighting the status, research focal themes and adaptive strategies, which will be circulated to all the participants, national and international organisations for possible attention ***- Dr. S. Ayyappan,*** *Secretary (DARE) & Director-General (ICAR), New Delhi*

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What is needed in most countries in the dry areas are:(1)A comprehensive National Strategy for Sustainable Agricultural Development taking into consideration the available land and water resources and successful case studies; (2) A National Agricultural Research Strategy to support the implementation of the Agricultural Development Strategy; (3) Five year action plans to implement both strategies; (4) Comprehensive regional or sub-regional cooperation programs to enhance food security; (5) The political support and the strong will to put agriculture as a top national priority ***- Dr. Mahmoud Solh-*** *Director General, The International Center for Agricultural Research in Dry Areas (ICARDA)*

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Policy setting implies including climate change impacts and adaptations in all major development planning activities; new infrastructure creation, policies and institutions to support the new land use arrangements identified by science and technology. Investment in water harvesting and conservation options; and promotion of small farm mechanization and efficient water use technologies; facilitation of greater adoption of scientific and economic pricing policies, especially for water, land, energy, and other resources further exploring international partnerships for joint food security; providing financial incentivize and packages for adoption of resource conservation technologies; establishing an inter-ministerial institutional mechanism for strategic follow-up action. There is need to incentive the industry and farming community for producing and using slow release fertilizers and greenhouse gas inhibitors; exploring clean development mechanism benefits for mitigation strategies for farmers and agriculture-based industry ***- Dr. Anil Kumar Singh,*** *Natural Resources Management Division, (ICAR)*

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Agriculture is under threat. The area under agriculture is increasingly being reduced due to rapid urbanization, indiscriminate growth of industrial townships, mining including illegal mining, infrastructure projects-roads-highways, railways, ports so on and so forth. The worst affected continue to be small and marginal farmers. The overall impact of above – if not taken care of properly, would have disastrous consequences. With prosperity there is an increasing gap between leaders and communities. This gap has to be bridged through focused community leadership enhancement initiatives that focus on "Awareness for Action & Leadership that enables Participatory Sustainable Development" particularly awareness has to be created in all stakeholders right from the highest level say Chief Minister and Chief Secretary to lowest level, viz. Sarpanches of villages and village level workers (VLW) ***– Dr. Kirit N Shelat*** *IAS (Rtd.),* ***ISPL and NCCSD***

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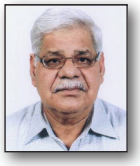

Tree-based technologies have additional environmental benefits including huge amount of carbon sequestration, biological reclamation and mitigating climate change. Due to agroforestry movement it has been found that half of the agricultural land in the world has more than 10% tree cover. Opportunities exist for alternate land uses through agroforestry systems on problematic areas including eroded, salty and water scarcity and water logged areas along with their adaptability to climate change. Research attempts should be made to develop fast growing trees which could absorb more carbon dioxide and release more oxygen and withstand higher temperatures ***– Dr. J.C. Dagar,*** *Natural Resources Management Division, (ICAR),*

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Livestock integrated agroforestry is perhaps one of the oldest forms of agroforestry. Cattle, goats and sheeps have been fed with browse (tree, fodder) or from pastures grown on wooded rangelands since immemorial times. If browse is produced, animals can themselves browse the trees, as for goats and

camels, or the browse can be cut and carried for stall feeding, as in fodder banks. A diversity of crop and animal species, at the community, farm, or field level adds to social and economic consistency through reducing dependence on a single enterprise ***– Dr. A. Arunachalam,*** *Division of Natural Resources Management (ICAR)*

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Climate Change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period. Recognition of 'climate change' as a significant global environmental challenge has a recent origin. Since the beginning of the industrial revolution, various anthropogenic activities like fossil fuel combustion, agricultural systems, changing land use patterns etc., have resulted in altering the chemical composition of earth's atmosphere through increased concentrations of Greenhouse gases (GHGs) like carbon dioxide, methane, nitrogen oxides etc., This 'anthropogenic induced climate change' has become a cause of serious concern due to its impact on the earth's radiation budget and related implications for food production, water supply, health, energy, etc., In the present global context, climate change is probably among the most challenging issues ever to be addressed by the scientific community and humanity as a whole *– Dr. Y S Rajan, Professor at ISRO Headquarters and Chief Mentor*

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Projections based on population growth and food consumption indicate that agricultural production will need to increase by at least 70% to meet demands by 2050. Most estimates also indicate that climate change is likely to reduce agricultural productivity, production stability and incomes in some areas that already suffer from food insecurity, high rates of poverty and feeble adaptive capacities to cope with adverse climate impacts. However, till now agriculture has been side-lined from climate change discussions even if it contributes substantially to greenhouse gas emissions while remaining highly vulnerable to climate change impacts ***– Dr. Mohamed Behnassi,*** *Faculty of Law, Economics and Social Sciences, Ibn Zohr University of Agadir (Morocco)*

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Agriculture is one of the most vulnerable sectors to climate change. Indian agriculture being primarily dependent on monsoon rainfall is particularly vulnerable to inter-annual and intra seasonal climate variability. Unlike developed countries, the adaptive capacity of Indian farmers to climate extremes is quite low due to their poor economic status and inadequate infrastructure and credit support in rural areas ***– Dr. B. Venkateswarlu,*** *Director, Central Research Institute for Dryland Agriculture*

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Drylands face a range of global challenges that raise serious concerns for food security, rural poverty and environmental degradation. Recent advances in dryland research for development (R4D) can deliver international public goods that can be applied and out-scaled to improve productivity, profitability and the livelihoods of the 2.5 billion people living in the dry areas, while safeguarding biodiversity and protecting environments ***– Dr. R. Serraj,*** *ICARDA*

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Mainstreaming of climate concerns in national and local polices can only be achieved by ensuring sustainability of climate initiatives into key sectors through proper coordination and collaborations with key stakeholders ***– Dr. Satya Priya,*** *National Programme Coordinator, Food and Agriculture Organization of the United Nations*

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Like India, sub-Sahara Africa is likely to suffer most from the effects of climate change. This would be disastrous given that it is the only region in the world where agricultural productivity per capita has been falling for the past 40 years. Consequently, over 200 million people are estimated to be prone to food insecurity and malnourishment. required to improve access to 3 key interventions are needed a) inputs (seeds and fertilizers, and a key bottleneck here is access to affordable financing for smallholder farmers), b) knowledge and extension services, and c) reliable and remunerative markets ***– Dr. Bashir Jama,*** *Alliance for a Green Revolution in Africa (AGRA)*

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Extensive research on growth theory suggests that reconfiguration of the current manner of combining factors of production in a given activity with a view to improving efficiency of resource use is vital for sustained high economic growth. The knowledge economy and knowledge management are essential for such a reconfiguration, as applied to India's agricultural sector ***– Dr. Mukul G. Asher,*** *LKY School of Public Policy, Singapore*

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India has a long coastline of more than 7500 km. Coastal ecosystems play a complex and vital role in supporting economic prosperity and social welfare particularly for people living in those areas. The coastal area supports productive and protective habitats such as mangroves, coral reefs wetlands, mud flats and sand dunes ***– Dr. R.V. Ramarao,*** *Director, IDPS*

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As the Bellagio Declaration on Overcoming Hunger in the 1990s had stated more than two decades ago, we have collectively failed more than one billion of our people in a world of potential food plenty. Yet, today's failure may be but a prologue to a much larger failure in the future. To reverse this trend, a

holistic shift is needed. This shift should be political, economic, and paradigmatic. From this perspective, achieving sustainable food security in the decades ahead emerges as one of the greatest challenges humanity has ever faced ***– Dr. Gabrielle Kissinger,*** *Lexeme Consulting, Vancouver, Canada*

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The photosynthetic ability of crops and associated vegetation has to be recognized and further strengthened by recruiting larger tracts of land. This will also expand livelihood opportunities and meet emerging food and nutritional security related challenges. These are critical aspects of sustainability and have to be addressed on a priority basis to complement the national missions through a bottom – up intervention ***– Dr. R Gopichandran,*** *GERMI and NCCSD*

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The provision of modern agricultural innovation is recognised as a critical foundation for sustainable development and central to food security in the face of climate change and population growth. Effective policies to expand modern agrobiotechnology access need to be grounded in a robust information-based public policy framework ***– Dr. Nazia Mintz-Habib,*** *Center for International Development, Kennedy School of Government, Harvard University*

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All advanced research and studies in science have confirmed human actions are significantly enhancing the problems of climate change. It is believed that current legislative and regulatory proposals, treaties and agreements have failed to reduce anthropogenic sources of emissions. Efforts to reduce GHGs are directed only to activities in transportation, industrial and electric sectors. It is imperative that the global community must adopt policies and effective programmes as set forth in the UN Framework Convention on Climate Change (UNFCCC) to deal pragmatically all major sources of GHGs emissions including the important area of agriculture ***– Dr. R.K. Nayak,*** *The Environmental & Consumer Protection Foundation, New Delhi*

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Agriculture sector has significant potential as a sink for GHG emissions. Agriculture sector is yet to be benefited by CDM because of diversity involved in the sector and complexity involved in the CDM process ***- Shri Shalin Shah,*** *APSEZ and NCCSD*

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A major challenge facing climate scientists is explaining to non-specialists the risks and uncertainties surrounding potential changes over the coming years, decades and centuries. Hence, effective science communication is needed to meet this challenge. ***– Dr. Kinkini Dasgupta Misra,*** *Scientist E, Div. Head, Gender and Technology Communication*

Socioeconomic & Ecological Challenges of Sustainable Agriculture for Smallholders in Indian eco-region should be seen from a development perspective ***- Dr Dipayan Dey,*** *South Asian Forum for Environment*

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If we look at our eternal resources the Panch Tatwa, The sun, air water soil and the space as true resources, managed responsibly by the community a new civilization can emerge. 3 years ago on our Rukmavati River Basin covering 46 villages and a population of around 70000 persons, we discussed this subject with the community leaders. They were not only highly enthused but were ready to learn and participate for building this 21st century relevant civilization. Yes, we said this can be a new civilization free from exploitation and even pollution. We could see that working responsibly on the river basin, we created water security, food security, and infused excellent sprit for future responsibility among our young generation. We now have our earth as a good residence for all. But most important we are building a cohesive interacting community brotherhood ***– Shri K C Shroff,*** *Veteran NGO*

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We need to develop a comprehension framework for involving rural communities in water management. There are small rivers that tend to dry faster and have to therefore be tackled through a holistic approach. The integrated river basin management project in Mandvi taluka of Kachchh district is an effort to harvest every drop of water for providing sustainable livelihood to 400 households ***– Shri Ashwin Shroff,*** *Chairman of VRTI & Excel Industries Limited.*

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In our sunlit tropical areas photosynthesis that plays a central role in capturing CO2 has to be seen as a major mitigation phenomenon with respect to climate change. Its role in supplying oxygen is also critical. We have measured these conversions and seen the positive changes in the environment ***– Dr. S K Nanda*** *(IAS), Principal Secretary, Department of environment and forest, Government of Gujarat.*

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We all know and agree that climate change is happening! We must be serious about adaptation and mitigation and we must do so now. There is no time for delay. The people who are bearing the brunt of the effects of climate change are those who can least afford to do so and who have done least to cause the problem. Hence, climate change adaptation and mitigation are both a practical need and a moral imperative. A climate-smart, food-secure world is possible only if we:

Act Now, as today's actions determine tomorrow's options;

Act Together, since we all have a role to play; and

Act Differently, to enable us to make robust rather than optimal decisions.
The need to integrate the economic, social and environmental dimensions of development so as to achieve sustainability was clearly defined a quarter of a century ago. Amid the threat of climate change, it is time to make it happen ***– Dr. William D. Dar,*** *Director General, ICRISAT*

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A recent international conference on climate change and sustainable agriculture in New Delhi brought forth the shocking realisation that there are no conclusive studies in India on the prospective impact of climate change on the agriculture sector including livestock and fisheries. Much of the country's understanding comes from global data provided by the Intergovernmental Panel on Climate Change, the World Meteorological Organisation and other world bodies. The conference theme paper contained the following admission: "The climate system is extremely complex and poorly understood in terms of extent, timing and impact. Thus, the knowledge and understanding of implications of climate change at the national level is inadequate and fragmentary." The simple requirement of farmers on the ground in States like Punjab and Haryana is advanced and accurate information on weather. They want quick movement of kharif stock so that they can bring forward the sowing of rabi-wheat. But the government has done precious little towards this. Coastal states situated along the 7,500-km coastline seek policies to sustain productive and protective habitats such as mangroves, coral reefs wetlands and fisheries. Hilly states want development of traditional forest land from which they draw green feeds and grasses to indigenously manage natural resources. High-altitude states, which face droughts, frosts, torrential rains and landslides, prefer integrated soil and watershed management in a farming system mode to sustain them through the year. Clearly rather than the top-down policy shifts that could jeopardise food security, there is pressing need for honest location-specific research in partnership with small and marginal farmers to assess over a period of time the impact of climate change. Instead of being driven by international funding, such research should be driven by the needs of farmers. ***– The Hindu, Today's Paper Opinion, 21/2/2012, Gargi Parsai***

Part – VI : Photo Gallery

Inaugural Function

Release of Book of Dr. Kirit Shelat "Leadership and Greener Agriculture in the Arena of Climate Change" by Hon'ble Minister Shri Harish Rawat State Minister of Agriculture, Govt. of India

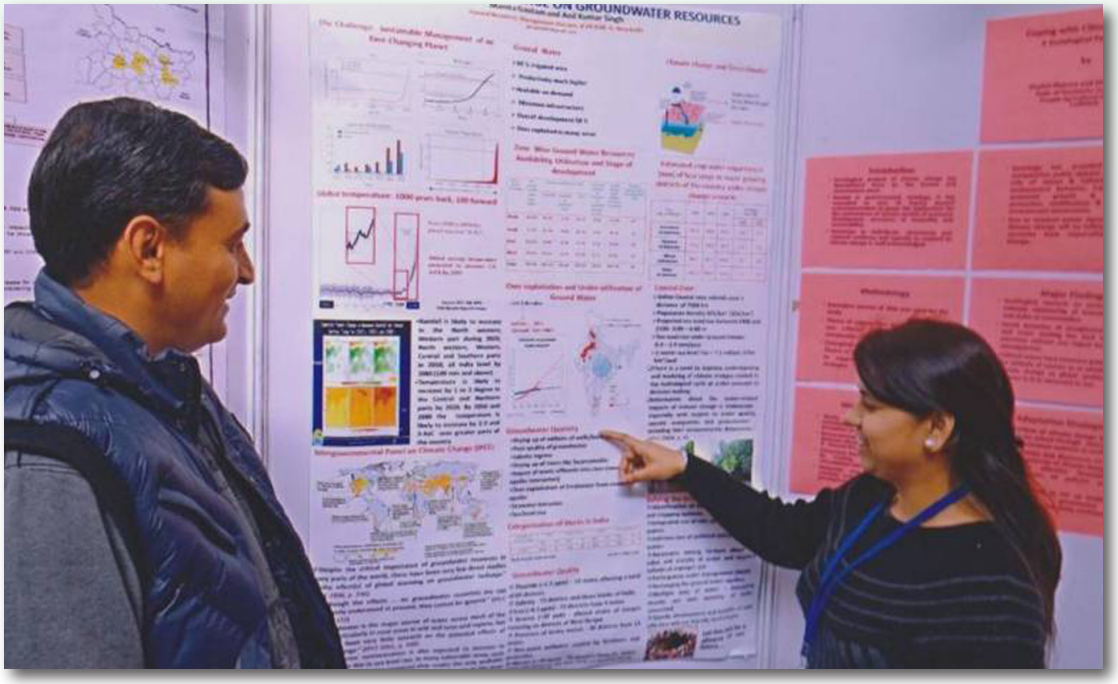
Release of a Compendium of Abstract of Papers

Welcome

Participants

Special Side Event

Poster Presentation



Interaction

Dr. A. K. Singh, ICAR

Dr. William Dar, Director General, ICRISAT

Interaction

Dr. J. C. Dagar

Justice B. P. Singh