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Conservation Agriculture newsletter

Getting Agriculture to Work for People & the Environment

Knowledge Assessment and Sharing on Sustainable Agriculture: Lessons for India

Adapted from the KASSA project deliverables: Comparative critical analysis report of the four platforms (2006)

An EU-funded project Knowledge Assessment and Sharing on Sustainable Agriculture (KASSA) was planned and implemented recognising that learning and sharing of results from an alternative research approach and experience can contribute to defining of pathways and tools to orient policies on development of Sustainable Agriculture. The major goal was capitalisation of results from past research on sustainable agriculture and development of perspectives for future research actions. It was aimed at building up a comprehensive knowledge base on sustainable agricultural practices, approaches and systems in support of stakeholders. These involved farmers and professionals, researchers and policymakers at local, regional, national, European and global locations. Conservation agriculture (CA) emerged as a major alternative to the conventional approach and the project concentrated on different experiences of CA in four regions represented by four platforms.

Partners and Organisations Involved

The project comprised a worldwide consortium with partners from 18 countries, 28 institutions, and 31 teams working together for 18 months during the years 2005-2007 in a structured manner. The project was coordinated by Center for International Cooperation in Agricultural Research for Development (CIRAD) and represented four regional platforms: European, Mediterranean, Asian and Latin American; to analyse common practices as well as specificities. The project's multinational approach was aimed at strengthening the relationship between Europe and southern hemisphere nations. Both areas face the shared challenge of developing a sustainable future for agriculture and the environment that impacts it; particularly with reference to issues of food security and safety, alleviating poverty, and economic and social progress.

The project work was performed and coordinated simultaneously in all the platforms. Among the participant institutions, 24 were governmental organisations mostly from the research and extension domain. Others included private commercial organisations, joint research centres, international organisations, and private non-profit organisations, that were either non-governmental in nature, involved in R&D activities with farmers at the field level; or farmer societies collaborating with researchers to develop, improve and disseminate agricultural technologies in support of sustainable development.

KASSA Implementation Process

KASSA was designed as a knowledge building process. Implementation of the work plan for KASSA went through intensive coordination and sharing among KASSA partners through a progressive process of knowledge generation, sharing and building up process that was updated by a set of three successive work sequences for progressive refining of findings. These were comprehensive inventory, assessment and critical analysis of existing knowledge on sustainable agriculture, learning from local/regional past and ongoing experience, and refining of findings. An external panel of experts contributed to the critical analysis and validation of KASSA results before their final delivery. The prospects for sustainable agriculture in different platforms were addressed at a closing international conference where KASSA results and findings, recommendations, and major future research actions were delivered.

Central coordination was managed by CIRAD, the leader of this EU initiative, to take stock of the knowledge acquired and of knowledge gaps in terms of sustainable agriculture. CIRAD's main role was global coherence of the project, coordination and integration across platforms and work packages, the quality and relevance of deliverables and monitoring of KASSA project development.

KASSA's achievements provided an updated, state-of-the-art view of sustainable agriculture across

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countries of the four regional platforms. The agricultural conditions in four platform countries represented a wide range of bio-physical and socio-economic situations where evolution of concepts and practices of sustainable agriculture were studied and evaluated. An important contribution of the project was in terms of the knowledge database developed. It formed an important tool for the inventory of existing results from past and on-going studies, researches, and experiences dealing with sustainable agriculture as alternatives to conventional agriculture. During the project, a web-based database was created and refined through work packages. Built over an open-source DBMS, the database contains about 1,335 referred publications from involved platforms with 934 locale information referred through publications. The database thus provides a gist of studies and experiences using a wide variety of CA technologies from different geographical platforms. CIRAD continues to operate and update this web site beyond the project duration.

CA Lessons from Platform Findings

Conceptually there appears an emerging consensus amongst the platforms/countries that CA is a way to achieve high levels of productivity in a sustainable manner. There also appears to be a good degree of agreement on the basic elements of CA that are minimal or no-tillage, soil cover maintained with crop residues, and adoption of crop rotation. Other elements include the need for farmer led innovations, integration of crop and animal based enterprises, new technologies/ prototypes such as drills, planters, zero-tillage, surface management of crop residues and need for long-term studies to monitor natural resource improvement. However, the stage of evolution of CA systems varies widely among platforms. While the concepts are well entrenched in various countries of other platforms, these are only the beginnings to be understood and appreciated in the Asian region. The driving force that led to evolution of CA concepts and practices vary a great deal among platform countries. These driving forces however present some important and innovative lessons.

The major driving force for farmers in all the platforms has been the reduction of cost in machinery and fuel, with operational time saving even when there were no appreciable increases in yield that permitted them to take up other complementary activities besides agriculture. The shift towards CA practices depends on site specific conditions including farm conditions, biophysical conditions, institutional, social, cultural and technological conditions, policy conditions, technology management and market conditions, its impact on health and environment. Soil erosion and water productivity in scarce-water agro ecosystems are said to be determinant by the farmer taking a decision to shift to conservation agriculture technologies. Existence of favourable governance conditions is one of the important elements that have enabled the emergence of farmers' leadership and dynamic and effective innovation systems involving stakeholders, and also in generating and sharing knowledge in order to correct, adapt and improve the system. Drivers and constraints stand identified at the farmers, institutional, social, and policy level for all platforms.

Relevance for Indian Agriculture

During this study, the knowledge base for sustainable agriculture was reviewed in respect of both irrigation based (mainly rice-wheat cropping systems) and rainfed production systems. A major learning for Asian platform is to spread the information about KASSA outcomes among colleagues who work on CA technologies and those from agricultural universities, research institutes, and ministries of agriculture and environment who work on new policies for good agricultural practices. The first important step to be carried out particularly in areas where knowledge gaps were identified is to inform people, scientists and ministries about the importance of CA. KASSA has provided such knowledge on sustainable agriculture in a comprehensive manner, and also identified gaps to be filled. This strengthening of scientific knowledge has a potential impact that can contribute to orientating the future strategy for sustainable agriculture development in India.

Drivers identified for development and use of CA based on the perception of platform

Farm-level Drivers

- Reduces costs
- Reduces soil erosion and soil degradation
- Improved water productivity
- More flexibility and improved timeliness of operations
- Diversification and enterprise selection

Institutional & Social Drivers

- Dynamism and effectiveness of innovation systems in generating knowledge to adapt and improve CA practices
- Extent to which CA implements and technical services are generally available to farmers
- Leadership from farmers and farmer organizations in the transformation from Conventional to CA
- Occurrence of a 'crisis' resulting in a more rapid development of CA practices and implements

Policy Drivers

- Favourable macroeconomic policies
- Favourable Agricultural Sector policies
- Policies affecting farm size, agrarian structure, and land tenure
- Appropriate agricultural research policies
- Policies for training, communication and support for farmers' initiatives
- Technology management - residues, cover crops, crop rotation
- Weeds, pests and diseases
- Increased production costs
- Non-availability of CA implements
- Lack of subsidies and credit facilities
- Lack of Knowledge
- The problem of 'mindset'

Any efforts to promote adoption of CA practices would call for supporting policies. Thus, it will be important that research for CA has a built in component to influence relevant policies. CA has emerged as a major strategy to achieve goals of sustainable agriculture. It is well understood from the learning of other platform reports that the concept of CA in India is just taking root. Thus, adaptive strategies for a CA system will be highly site specific, yet learning across the sites will be a powerful way to understand why certain technologies or practices are effective in a set of situations and not in another. This learning process will greatly accelerate in developing a knowledge base for sustainable resource management.

Driving forces for shift to CA were varied and depended upon specific socio-economic conditions among various platforms. In the past, the major driving force nder Indian conditions has been increasing productivity with little concern for resource quality and its improvement as a continuous process. However, there is an increasing awareness that sustainability is under threat due to continuing resource degradation. In India, a well articulated policy goal for livelihood security and rural development must now replace the narrow 'food security' policy based on cereals production. Policy framework for promotion of CA will require fundamental changes and these will have to be identified and promoted in a holistic manner. Policy regimes need to emphasise resource conservation and new policies need to emerge as a part of the CA technology generation. Such adoption and change in policy has to complement or build in the CA technology generation and adoption regimes. For example, learning from efforts of Rice-Wheat Consortium has not yet been built into our national system. This comparative analysis would also help suggest a number of general/diverse principles of CA. Developing and promoting networking to share information amongst farmers, scientists and other stakeholders would be critical in advancing spread and continuous upgradation of the CA system. However, understanding the diversity and context, specific nature of the processes would help in learning and changing for better.

As CA systems are much more complex, managing the systems efficiently will be highly demanding in terms of understanding of basic processes and component interactions that determine the whole system performance. Developing strategies to manage CA systems will require a clear understanding of total system functioning and building a systems perspective in generating and promoting new technologies. A systems perspective is best built working in partnership with farmers who are at the core of the farming system and well understand system functioning. Scientists, farmers, extension agents and other stakeholders like policy makers and the private sector working in partnership mode will need to play the critical role in developing and promoting new technologies. Understanding system interactions and developing management strategies will call for teams of scientists across disciplines working together using an innovation system framework where research is considered as a part of the innovation process. This will also call for new ways of managing and funding research. Institutional mechanisms are required to ensure that CA is seen as a concept beyond agriculture. There is need for policy analysis to understand how conservation practice can integrate with other technologies, policy instruments, and institutional arrangements that promote or deter Conservation Agriculture. It is therefore a challenge, both for the scientific community and the farmers to look beyond past thinking and explore the opportunities that CA offers for sustained agriculture. CA is now considered a route to sustainable agriculture and looking to such priorities identified by the country, spread of CA will therefore call for a greatly strengthened research and linked development effort.

National Consultation on Conservation Agriculture, New Delhi, December 11, 2008

The National Consultation on Conservation Agriculture being jointly organized by PACA and NCAP (ICAR) has now been rescheduled and will be held on December 11th, 2008. This event is a national run up to the forthcoming World Congress on Conservation Agriculture, being hosted by India bringing together global players involved with CA. This consultation will fulfill the need to discuss the Indian perspective to Conservation Agriculture (CA) before the World Congress.

A background paper highlighting CA as a basis for directional change in agriculture research has been prepared and circulated to steer this consultation and can be downloaded from the PACA website (www.conserveagri.org/NC_Paper.pdf). Highlights covered in the background paper include:

- Recent trends and concerns of Indian Agriculture through evolution of the national agriculture research system to meet emerging challenges
- Coverage of national efforts such as, National Agriculture Policy, 2001, National Development Council, 11th Five Year Plan, National Agriculture Innovation Project, National Action Plan on Climate Change, and their implications for research
- Developments on the global front such as, Global Forum for Agriculture Research (GFAR), International Assessment of Agriculture Science and Technology for Development Report (IAASTD), 2008, World Bank Report, 2008 and their implication for Indian agriculture research for development.
- The need for eco-region specific approaches for long term agricultural sustainability, and to meet challenges related to rainfed agriculture and climate change.
- The need for mainstreaming CA for agriculture research and development supported through international and national efforts in India

Key discussion points have been identified that will be deliberated by a select group of stakeholders invited for the National Consultation. Your views would be welcome and may be mailed to info@conserveagri.org before 4th December, 2008.

Proceedings of the Consultations Organised at CCSHAU, Hisar, September 4, 2008

Conservation Agriculture in Haryana: Consultation with Researchers at Haryana Agricultural University, Hisar

The consultation was a collaborative effort of CCS Haryana Agricultural University (CCSHAU) & PACA aimed at encouraging deliberations within the research system of Haryana state to define future efforts needed to be positioned to improve on delivery of research and extension components in agriculture

A one-day consultation was organised to discuss concerns and challenges facing agriculture in the form of widespread problem of resource degradation, declining productivity, rising fuel prices, and impact of climate change. One of the major recommendations that had emerged at PACA's inaugural meeting (PACA Newsletter Issue 2) was that Conservation Agriculture (CA) needed to be region and resource specific and to address this need, the lead should come from State Agricultural Universities and their regional research stations (including Krishi Vigyan Kendras - KVKs) backed by support of ICAR institutions. The need for successful transition from a conventional to a CA based system called for a change in the mindset of both scientific and farming communities. Keeping such needs in focus, this consultation was organised at Haryana Agricultural University (HAU), Hisar that brought together the academic and research community to understand efforts carried out in Haryana and sensitise them on CA as a way forward.

Issues and Problems

A brief background was presented followed by an introductory session that highlighted key issues for discussion in the specific context of the State helping in drawing up a strategy for future growth. This session had major presentations by Dr. J. C. Katyal, Vice Chancellor, CCSHAU, Dr. R.K. Malik, Director Extension, CCSHAU, Hisar, Dr. I.P. Abrol, Promoter PACA. The common consensus was that CA is based on sound, well researched, and scientific principles and thus would work in the Indian context. CA practices are being increasingly adopted worldwide with beginnings already made in India, Haryana in particular taking a lead. However, successful widespread adoption would not be easy and straight forward given the inertia of the system.

The focus of the session was on CA principles built through research based evidence in the State with major issues and problems discussed being:

- The relevance and potential of CA in Haryana State given the mounting pressure on land and water resource, and spiralling energy costs resulting in sharp increase in cost of production. CA is important for its benefits related to long term improvements in the soil quality (e.g. organic carbon) with reduced erodability, compactibility, soil bio-diversity, and its link to carbon sequestration.
- CA integrates concerns of raising productivity while maintaining and enhancing resource base and resource use efficiency that would contribute to enhancing income of farmers and impart greater resilience to production systems against climate related impacts.
- CA elements included, causing minimum disturbance to soil by adopting zero-tillage, keeping the soil surface covered with residues, and adoption of diversified crop rotations in the spatial and temporal context. Both direct as well as indirect benefits were discussed. Emphasis was laid on the underlying principles of CA and how it could reverse the unsustainable downward spiral of increased dependence on external inputs, declining resource base quality and productivity (See Figure 1).
- Influence of CA approach on livelihoods through resource conservation, improved environmental quality, diversification/biodiversity, rural development, and food security were considered crucial in the local as well as global context.
- In Haryana over last 5 years, 25% of area sown to wheat has come under zero-tillage. While old ways may not always work, new ways would require that scientists work with farmers on their fields ensuring participation, validation, and wider dissemination. Adoption of resource conservation technologies (RCTs) in Haryana could be credited to farmers mainly responsible for its widespread coverage.
- Successful evolution of CA would require a strong adaptive research program to test, refine and adapt CA practices under a range of farming situations/eco-region conditions. Participation of farmers in refining and adapting practices would involve multidisciplinary teams working with the farmers on farmers' fields in varied situations.
- CA practices are knowledge intensive and would thus require strong technological, institutional and policy support at different levels. The need would be to define and prioritise research for development agenda as a coordinated approach; define

Dr. J.C. Katyal, Vice Chancellor, CCSHAU addressing the consultation meeting

roles of stakeholders, and build their capacity.

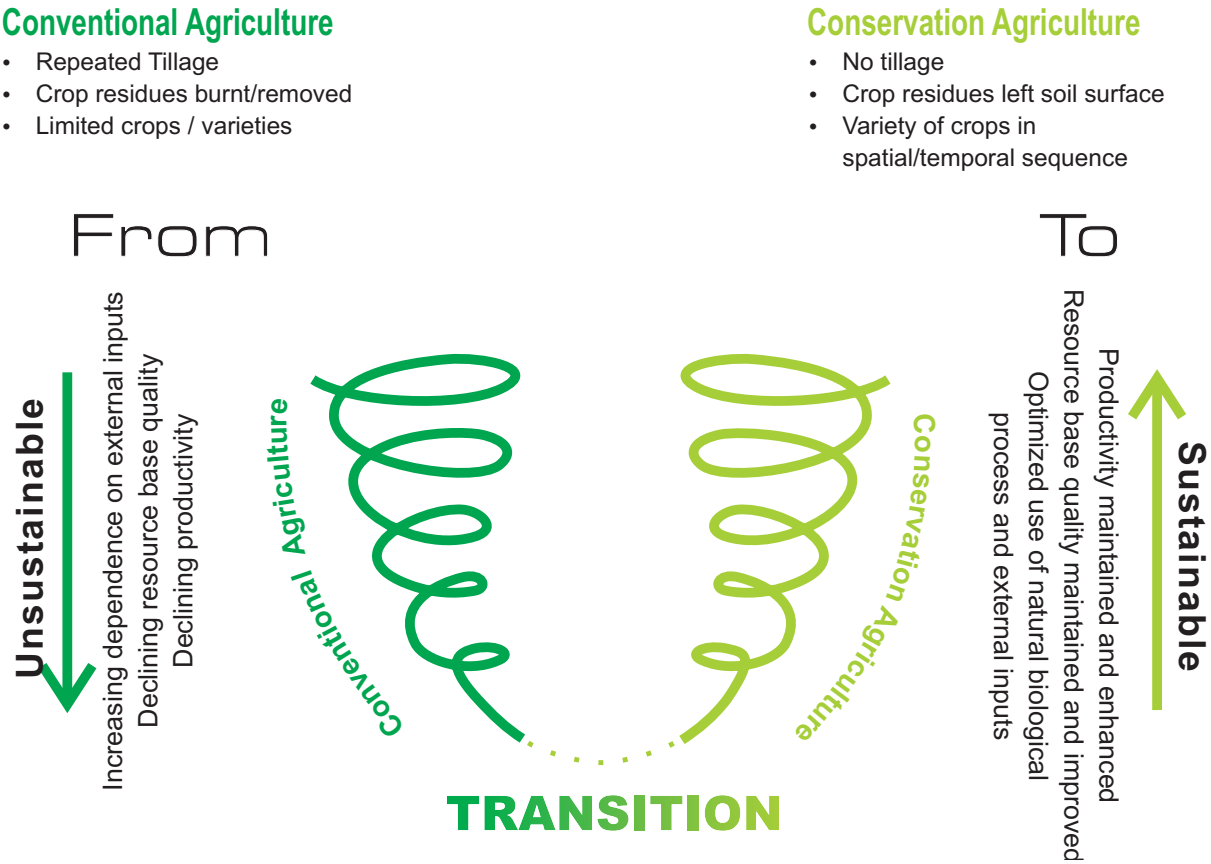
- Sustainability of zero-tillage in various crop combinations (wheat/pearl millet, wheat/sorghum) is reflected through increased yield (data indications from 2001-08). Few studies had also reflected on the role of CA in giving protection from terminal heat. Microbial populations monitored for five years had revealed increase in their population.
- Besides zero-tillage, benefits from practices such as bed planting, intercropping, crop diversification were also discussed. Harmful effects of puddling, rice transplantation, and poor availability of labour were major constraints that paved the way for direct seeding that was getting popular with farmers in the State.
- CA needed to become a farmer led movement strongly backed by the scientific community. Involvement of multitude of stakeholders such as farm machinery manufacturers, state department functionaries needed to be backed by a strong input of social scientists for review at all stages. The major requirement was to bring about a change in the mindset of scientists, farmers and policy makers alike.
- Incentives, policies, subsidies for practicing CA based approaches would be needed to promote its adoption. However, the need for implementable agronomic practices or Good Agricultural Practices (GAP) was a must for achieving success in CA efforts. There was thus a need to scale up with a view on sustainability.

Panel Discussion

The introductory session paved the way for a panel discussion chaired by Dr. Gurbachan Singh, Director, Central Soil Salinity Research Institute (CSSRI), who raised issues concerning the current fatigue within the State in the context of agricultural technology and related challenges ahead. The panel discussion brought together subject specialists from different fields such as agro-forestry, agriculture economics, weed scientists, from the university system who shared specific field related concerns with relevance to CA in the State. Key issues mentioned below emerged during this discussion and formed an important input to the concluding session:

- Benefits from crop diversification were discussed with specific reference to crops such as moong, maize, pigeon pea, and soya. Also discussed was the need for diversification from rice to other crops based on agro-climatic zones in the country where progress had not been significant
- CA adoption would urgently need setting up long term experiments to answer resource related questions through farmers participatory research beyond the current practice of 4 x 4 meter plots with emphasis on weather based agricultural planning
- Pursuit of action research by bringing together need based diverse stakeholders with social sciences playing a critical role was highlighted
- Relevance of agro-forestry in Haryana was suggested through examples specially revealed through NATP supported intensive studies
- Concerns related to participation of small landholder farmers with 50% of them cultivating less than 1 hectare had to be addressed, including needs of technology. Need was also felt to learn from farmers' experiences in tackling problems of weeds, direct seeded rice, agro-forestry for generation of bio-energy through under-utilised plants such as

Figure 1: The Conservation Agriculture Transition Process



Prosophis juliflora, that offered a potential to form a major source of livelihoods

- Need to look at infrastructure for inputs, processing and market
- Need for biotechnological interventions facilitated through land-to-lab programmes
- Concern over non-compliance of "package of practices" established through frontline demonstrations
- Problems specific to cotton belt in the State where cotton-wheat in zero-tillage was not possible due to problems related to weeds and non-inclusion of legumes with need expressed for a quick growing legume in the region
- Exploration through specific research on issues such as uptake of nutrients like nitrogen, better seed placement in zero-tillage, crop-livestock interface, long term tillage/residue management practices affected soil biology, soil water relationships, pests and nematodes incidence, plant's responses to the changing soil environment, and how these changes influenced management needs of crops
- Need for publications based on above studies to understand long term impacts on natural resources
- Indicators of soil health index revealing an improvement with zero-tillage and bio-fertiliser use

In conclusion it was stated that while problems were many and complex, local work in partnership mode with the research system was the only way to answer questions raised by farmers reverting back to conventional tillage.

Conclusions

The wrap-up session led to the following major conclusions pointing to the way forward:

- There appeared little doubt that CA practices offered a way forward to enhance agricultural sustainability that had become a major challenge before the scientific and development community.
- It was apparent from discussions that the shift from conventional to CA practices would not be smooth and difficulties would be encountered on its path to being a sustainable form of agriculture. CA calls for a revisit to the entire range of practices including planting and harvesting, water and nutrient management, diseases and pest control that need to evolve to match the context of contemporary systems.
- There was a need to set up long term experiments at different sites covering various agro-ecological regions to answer most questions. This along with appropriate monitoring would assist in understanding long term implications of practices in terms of changing management needs in the light of change in soil physical, chemical and biological properties. This would also require monitoring of adoption process and constraints at the farmer level for effective and continuous build up and knowledge supply by the scientific community.
- Besides resources, systematic monitoring of socio-economic, environmental and institutional changes would need to become a part of CA based projects. CA offers a good opportunity, looking to the current soil and water situation and other challenges being faced in view of global climatic changes.
- Policy orientation while strengthening socio-economic research to understand farming systems and how crop residues were being managed, and machinery/tools needs and other components/practices needed for CA adoption was crucial.
- Success in CA demanded a more holistic planning invoking many disciplines, several education and extension wings of the university and a more coordinated effort at the university level.
- Emphasis thus far had been on zero–tillage that is not enough. What is needed is a more integrated approach that involved exploring issues such as residue management, cropping systems, farm machinery research, and agro-forestry needs in each of the cropping system/agro-climatic zones of the state. In particular emphasis was needed on monitoring biological interactions as they influenced the sustainability of the production system.
- Education and awareness among farmers regarding short term as well as long term benefits of CA practice needed to be given emphasis. This would call for reaching the beneficial message to farmers and building conviction of these principles.
- Haryana was one of the high input intensive zones contributing to food security needs of the country along with Punjab and western UP. There was a need to introspect and analyse structured information relating to non-adoption and reversion of some farmers back to conventional tillage from a strong social science perspective. This would call for strengthened monitoring and evaluation efforts along with policy research.
- Systems approach and not component based approach was the way to make things work effectively. CA would help to improve water, land, and atmosphere paving the way for productive, profitable and stable agriculture. Building a systems perspective in research would be fundamental to generating and promoting new technologies. This perspective would be best built by working in partnership with farmers who were at the centre of the farming system. To this end, scientists, extension workers and other stakeholders needed to work in partnership mode concentrating on responses and feedback gathered from farmer's experience in their fields. The systems perspective would also call for improved interaction and developing management strategies to enable a team of scientists across disciplines to work together in problem solving mode from a local perspective.
- Strengthening capacity of the scientists to re-orient and enhance their attitude and capability need to be integral to efforts to promote and sustain efforts aimed at improved induction of CA approaches.

The most important outcome of the meeting was the coming together of various scientific faculties who saw a relationship between their area of work and needs of conservation agriculture. They shared a common view that CA was relevant to needs of mainstream agriculture. Such a coming together of various subject matter specialists to contribute to the cause of CA for benefit of Haryana farmers was indeed a heartening experience.

Conservation Agriculture: The Way Forward

Dr. Sanjeev Chopra
Agriculture Secretary, Govt. of West Bengal

Last week, your columnist was invited in his capacity as the Agriculture Secretary of West Bengal to a seminar by the Professional Association for Conservation Agriculture (PACA) to mark the World Day to combat Desertification and Drought (17 June) at the sprawling National Agriculture Science Complex in New Delhi. The seminar was addressed among others by Dr. R.S. Paroda, ex-DG of ICAR, Dr. R.B. Singh, a former ADG of FAO, and Dr IP Abrol, who heads the Centre for Advancement of Sustainable Agriculture, and is a promoter of PACA. The initiative to get the seminar going was taken by Sanjeev Vasudev, Promoter, PACA; who has a long experience of working with primary producers in a wide range of sectors – from bamboo to handicrafts and small farmers.

Before we take up how Conservation Agriculture (CA) can impact Indian farmers and agriculture, it is important to understand what CA is all about, and how over the last three decades, chemical and capital intensive agriculture came to be called conventional agriculture. (Interestingly, all of them, conservation, and chemical based capital intensive and conventional start with a C!)

Conservation Agriculture refers to the gamut of practices that have a basis in three basic principles, viz, minimum disturbance of soil through practices like zero or no tillage, keeping soil surfaces covered by leaving crop residues on it, and adopting diversified crop rotation measures, and growing crops that have a symbiotic correlation to each other. It also integrates the science of soil and water conservation: mainly from an eco-regional approach, and is not at conceptual variance from the Agro-Climatic Regional Planning which Mr. Y.K. Alagh tried very hard to institutionalise during his term at the Planning Commission. Perhaps, it was an idea that was good, but whose time had not come. But today, as the ravages of conventional agriculture are becoming clear, ground water tables are sinking, and newer areas coming under the spectre of drought and desertification, the idea is gradually sinking in, not just in India, but throughout the world that with some sensible calibration of inputs and resources, optimisation of resources is eminently feasible.

The direct and more apparent benefits of CA include cost reduction linked to savings in fuel, labour and machinery costs, which are driving ever more farmers to adopt zero tillage. It also leads to better Resource Use Efficiency (RUE) for, in the medium to long run, it is better for a farmer to 'conserve' his soil, rather than 'mine' it away. Under this system, it is possible for farmers to actually enhance the sustainable capacity of the soil. It also offers an opportunity to the farmers to reverse the processes that had earlier led to this stress.

The next question is: will it work in India? Dr Abrol feels that there is no reason why it should not, given the fact that it has worked well elsewhere – in North and South Americas, Europe, Japan and South East Asia. In fact, over the last few years, several farmers in India have also switched to CA, and reaped benefits. The presence of a well established extension system at the field level, and the vibrant farm machinery sector augur well. The network of agriculture universities and KVKs will have to be in the forefront, as also the state agriculture departments, which will have to move away from the 'one size fits all', input based extension system to a knowledge driven extension system, which will also be more farmer centred and participative. The transformation is possible, but at the same time it will not be a cakewalk, because the 'fertiliser' network has also developed strong and entrenched roots by this time.

The Agriculture Departments, (if they are convinced) will have to first internalise this in their own demonstration farms, and show that 'zero till' works, but with the caveat that residues have to be left behind to regenerate the soils. The issue is not of yield per acre, but of RUE, the cost benefit ratio between inputs and outputs.

The point which this columnist made at the seminar was that, in addition to looking at conservation from the point of view of biotic resources, we also have to examine the 'political economy' of conventional agriculture. As it is highly capital intensive, and also highly subsidy driven, the bulk of subsidy gets to the medium and large farmer in the agriculturally more prosperous regions of the country. CA is more suited for marginal and small farmer, and if we can get the knowledge and technologies of CA working for them, we could ensure that food security is achieved at district and sub-district levels as well.

Before closing, your columnist would also like to voice the concern that ran through most speakers and panellists at the seminar. Is it not ironical that the world's nutritionally deficit areas are those where farming is the main occupation of the people? Does it mean that there is something intrinsically wrong in the way agriculture is pursued in these areas, or are there extraneous factors, like terms of trade, logistics and infrastructure, which make all the difference? After all, who determines the prices of commodities? From oil to wheat to bananas, it is this cartelisation of those who control the means of production by their economic and political clout. Europe and North America have less than 4% of their population in agriculture, but they are also well organised so that they dominate the market, which many developing countries' farmers cannot because of weak institutional structures. Perhaps it was because of this characteristic inability of farmers to come together that Marxist theorists referred to them as 'potatoes in a sack', rather than 'partners in revolution'.

Conservation Agriculture will require farmers to come out of their sack, and start asking questions? What would be the best options available through and after the potato crop? Which variety of potato should be grown? Should it be followed by sesame, or is the land better left fallow? Given the water table, and the soil type, is it better to grow pulses or wheat or cotton? What would be the most profitable crop?

The way your columnist looks at it is that while it may make sense for the large farmer with a high risk taking ability to continue with conventional farming, or even move to a high risk-high gain circuit of GM crops, CA is the best bet for the small and marginal farmers, whose livelihoods are intimately connected with the health of their soil, and whose lands support not just the crops, but also the cattle and the backyard poultry. Conservation Agriculture is actually about a hundred flowers blooming, and thousands of cropping patterns! The more the merrier.

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SNIPPETS

NEWS

CONSERVATION AGRICULTURE CARBON OFFSET CONSULTATION, OCTOBER 28-30, 2008

This event was organised at Purdue University's Agronomy Centre for Research and Education, West Lafayette, Indiana. The United Nations Food and Agriculture Organization and the Conservation Technology Information Centre hosted an international discussion about the potential of conservation agriculture systems and sequestering carbon in contributing significantly to the mitigation of climate change. Scientists, researchers and agriculture conservation experts from Africa, Australia, Canada, Central America, India, South America, USA, among other locations sat together to focus on how agricultural conservation practices may engage in the global carbon offset market.

Key issues discussed included, the latest research on impact of conservation farming on carbon and greenhouse gases around the world; tools for monitoring and measuring carbon sequestration to enable credit trading; demand for a carbon market; how carbon markets function in different regions; barriers and opportunities to adopting low-emissions farming techniques.

Consultation also included United Nations Framework Convention on Climate Change (UNFCCC) secretariat on carbon finance and how it can assist in enabling GHG agricultural mitigation and carbon sink actions and measures, with particular reference to the Clean Development Mechanism.

Session I included the topic "Conservation Agriculture for Emission Reduction/Carbon Sequestration: Experiences from Institutes, Associations, Programs and Bodies". Session II marked discussions around the demand for Carbon Offset Markets, and Session III deliberated on the remaining Questions/Issues regarding conservation agriculture in global carbon offset markets. Key speakers included Theodore Friedrich, Neeta Hooda, Rattan Lal, Telmo Amado, Charles Rice, and Li Hongwen. These experts presented data available and discussed the potential for carbon sequestration in no-tillage cropping systems and other practices, methods and models for assessment of carbon credit trading, and techniques and practices for verification.

For further details, please view the following link of Conservation Technology Information Centre http://www.conservationinformation.org/?action=article&id=41

Have you read earlier issues of PACA Newsletter?
If not, you can download them from www.conserveagri.org/links.htm.
We welcome your feedback to help us improve our future issues.

REGIONAL WORKSHOP ON CA

The above workshop deliberated on "Investing in Sustainable Agriculture: The Case of Conservation Agriculture and Direct Seeding Mulch-Based Cropping Systems" with wide participation from various countries (Vietnam, Yunnan Province of PR of China, Cambodia, Thailand, Cameroon, Madagascar, France and Lao PDR). It was organised by National Agriculture and Forestry Research Institute (NAFRI) at Phonsavan (Xieng Khouang Province, Lao PDR) from 28th October to 1st November, 2008. Three main objectives for the workshop were:

- Discuss on research and extension approaches and transfer of knowledge for different stakeholders and to analyse the main constraints in upscaling CA alternatives.
- Strengthen and facilitate exchanges between countries of the Great Mekong Sub-region (GMS) and to promote regional exchanges and synergies in the field of CA.
- Develop a knowledge base in the field of CA, based on experiences of different countries of the GMS region in creating and validating CA and Direct Seeding Mulch-Based Cropping Systems.

The workshop was organised around four plenary sessions: (1) Agronomy and economy of CA and DMC systems, (2) Environmental (services) economy and eco-systemic properties, (3) Determining factors in up-scaling technologies and innovative systems, and (4) Strategy and tools to interact between stakeholders. Similarly working groups were also organised for focused discussions related to each session. During the same time, an agriculture fair and national exchange days, involving representatives of farmer groups, educational sector, private entrepreneurs were also organised. Presentations, article abstracts and results of the different working groups are available at www.nafri.org.la.

PUBLICATIONS

Meeting Report: Combating Land Degradation for Sustainable Agriculture - Is Conservation Agriculture the Way Forward for India?

Current Science, Volume 95, No.5, 25th September, 2008
http://www.ias.ac.in/currsci/sep252008/711.pdf

Conservation Agriculture: Environment, Farmer's Experiences, Innovations, Socio-Economy, Policy

By L. García-Torres, J. Benites, A. Martinez-Vilela, A. Holgado-Cabrera

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