Breakout Sessions P2.2 Land, Water, Forests and Landscapes - Briefing Paper

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**Context – the problems being addressed**

Agricultural systems in South Asia is mostly smallholder dominated, particularly in Bangladesh and Nepal. Rising costs of labour, energy and other inputs, indiscriminate and imbalanced use of external production inputs, labour shortages during peak cropping seasons, water management, vulnerability of soil to degradation, land degradation, rising temperatures and other biotic (diseases and insect-pests) and abiotic (salinity, drought, terminal heat, water logging) stresses led to lower farm profits, making farming unsustainable in South Asia.

However, because of concerted collaborative efforts from the national and international partners many promising solutions are emerging to overcome these constraints. Because of urbanization the agricultural land has been decreasing every year and in Bangladesh at alarming rate (one percent every year).

The adaptation and adoption of conservation agriculture (CA)-based crop management through innovative techniques like reduced soil movement, adequate surface retention of crop residues and economically viable and diversified crop rotations are the way forward to address the emerging challenges mentioned above. This could help in ensuring sustainable food security and offer several environmental benefits in sustainable way. This is relatively a new strategy to deal with food security and environmental degradation in unfavourable agriculture system.

**Current activities presented and discussed in the Session**

Optimization and intensification of cereal based cropping systems like, rice-rice, rice-wheat, rice-maize etc. with inclusion of legumes and oil seeds crops are being tested and promoted.

New innovative CA-based technology interventions are currently being developed and tested at locally, in an integrated manner across the South Asia region.

Participatory research trials at on-farm and delivery approaches are being adopted while validating and promoting CA based technologies at the national and regional level.

Interactions and orientation training at different levels like farmers, researchers, development professionals, policymakers, educationists, etc about the long-term benefits conservation agriculture is needed to change their mindset. Continuous interactions using farmers’ participatory technology development and delivery approaches and promotion of simple type of CA technologies based on “ljustuaeb si llams” principles should be promoted to satisfy the needs of small farmers in different parts of the region. Participatory research trials at on-farm and delivery approaches are being adopted while validating and promoting CA based technologies at the national and regional level.

Water is a precious commodity; hence less water-requiring crops and technologies like laser land leveller (LLL), axial flow pump (AFP) to reduce the cost of irrigations, etc. are being reviewed and promoted. The LLL saves up to 40 percent of the irrigation water applied while boosting cereal yields up to 10 percent.
Small farm-machineries with precise multi-crop planters like bed planters, zero and strip tilled, etc. machines are designed, tested, modified and promoted considering bio-physical and socio-economic environments.

Service provision concept is initiated and being promoted. Small and medium-scale entrepreneurs are supported and encouraged to buy and own the machinery and build businesses that provide services to many farming households at low cost. This approach assures that even small and marginal farmers can share in the transformative benefits achievable with scale-appropriate mechanization in the region.

Identify deficiencies in policy, market and access to knowledge for commercialization is although at infancy, and is being tried to address at institutional level.

**Intended outcomes**

- Policy constraints affecting the dissemination and adoption of CA-based crop management be documented and evaluated;
- Formulation and promotion of evidence-based recommendations for supportive policies and functional markets are being carried out;
- National and regional level networking will be developed and strengthened to facilitate knowledge sharing and learning CA;
- Developed and disseminated the promotional materials appropriate to each category of stakeholders, through electronic media, training courses, etc.
- Regional and country-wide experiences on CA shared and scaled up for wider-scale impact.
- The concept of local service provider to promote CA based mechanization introduced and promoted.

**Commitments to collective actions in 2012-2014 (national, regional or international)**

i. With existing resources

A common platform to foster the adoption of CA at national and regional level for sharing information is lacking. Therefore, it is essential to have a strong network of the multiple, relevant public and private sector stakeholders in partnership with farmers to insure the development and delivery of sound CA-based production technologies.

Conservation agriculture is knowledge-based and involves location specific changes in many components of the farming system. As such the development of locally adapted CA systems requires long-term commitment and concerted efforts from public and private sectors involved.

More knowledge on the interaction of soil, water, nutrient and energy will be required for fine tuning of technology for specific environment.

ii. Immediate gaps to be filled

Unsustainability is not an option and the traditional systems of land and crop management practices are exhaustive and are not sustainable. Despite several positive impacts on farmers and environment, the adoption of CA-based crop management technologies is to bring a paradigm shift from more ploughing for more harvest concept to minimum possible tillage concept. Major investment will be needed to bring the CA into the farming practice in the region through NARS, extension mechanism,
and education system.

**Information about technology:** Farmers are unaware about the CA based technological options that are available in the market.

**Policy:** Present policies in some of the countries are not favourable to attract private sector to come forward.

Proper understanding of **local knowledge and system** is important in all aspects of CA based technology development.

There is an urgent need to critically analyse the factors responsible for slow adoption of CA that would help to develop suitable mechanism to foster wider scale dissemination of the technologies for the benefit of resource poor farmers in the region.

**Long-term studies** are needed to fully understand the difference between genotype X management (CA based) X environment.

**Capacity building** focuses on key measures for professional capacity building for extension and research.

**Weed management** is a crucial aspect in CA based crop management; more studies are needed to understand about the effectiveness of molecules for different species of weed flora under different cropping systems.

Immediate focus should be on two WT operated machineries like multi-crop planters, laser leveller, harvester, threshers, etc. as per local need-based requirement.

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**iii. With specific large scale programme investment**

With co-financing from USAID and the Bill and Melinda Gates Foundation, the Cereal Systems Initiative for South Asia (CSISA) was launched in 2009 as a regional research for development initiative in response to the global food price crisis. It links several CGIAR research programs (CRP) with a wide range of public, private and civil society sector programs in the region (Bangladesh, India, Nepal, and Pakistan).

Since October 2010, CSISA has received support from the USAID Mission in Bangladesh and *Feed the Future* to expand activities in the stress-prone and impoverished areas of Bangladesh that have been prioritized in the comprehensive Country Investment Plan (CIP) in coordination of NARS.

Sustainable intensification of rice/maize production systems in Bangladesh with ACIAR funding (2009-2013) with core research institutes. The project is formally linked to the CSISA project in Bangladesh and South Asia.

Conservation agriculture is a strong component of these initiatives. This is also one of the priority areas set by the national agricultural research system like Bangladesh Agricultural Research Council (BARC).

Mainstreaming the CA technology in the cropping system is needed in the South Asia through further research, development and education.