

**TALKING POINTS
“AGRICULTURE AND TECHNOLOGY”**

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**FARMING FIRST SIDE EVENT
RIO+20 PREP COM
December 16, 2011
Room E**

Key Messages for session

- 1) *Farmers produce food in the face of the vagaries of weather, climate change, political instability, market volatility, and increasing pest pressures.*
- 2) *Farming is already a knowledge-based endeavour as farmers work to manage multiple variables.*
- 3) *All forms of agriculture must improve their impact on sustainable development.*
- 4) *Improving the mechanisms for sharing knowledge, adaptive strategies, and more sustainable techniques is the means to achieve the Millennium Development Goals, food security, and a green economy.*
- 5) *Rio+20 can leave a long-term legacy of improved agricultural research and extension services that can be used for the continual improvement agriculture and rural development.*

GREETINGS TO AUDIENCE

Technology comes in many forms. Some is yet conceived of. Yet many known technologies can meaningfully affect the capacity of farmers to meet multiple demands. Farmers represent one-third of the world's population and one-half of its poor.

Farmers provide multiple services to society, such as production of food, non-food products (such as fibres), delivery of ecosystem services and land stewardship to enhance and protect biodiversity. All of these services must be continually adapted to address food requirements and climate change, thus increasing output while minimizing the footprint of agriculture.

Improving food security, breaking the poverty cycle farmers face, and increasing the sustainability of all forms of agriculture around the world is dependent upon farmers' access to:

- a) Invaluable ongoing training to continuously improve agriculture
- b) Solutions geared specifically to rural women

c) Global links in delivery of national/regional extension systems to increase resilience

We believe the Summit could further policy coherence on food security and agriculture, drawing on the CSD-17 findings and the work of the High Level Task Force on Food Security.

Rio+20 offers an opportunity to galvanize around the systems that can improve farming, better livelihoods, and provide a mechanism to adapt to evolving global goals for farming. Specifically, **increasing and improving agricultural extension and advisory services are a LEGACY outcome that provides the knowledge-based infrastructure to continually adapt in agriculture.** Whether it is better meeting nutritional needs, improving water use efficiency, reducing land use or any of the other competing demands on farmer services, they are best met through improved practices based on knowledge.

Agricultural Extension Services

Of course this starts with key sciences like agronomy, biology, and engineering. The work of farmers in the field and researchers in their labs needs to be better linked.

An important way to achieve that is research councils including farmers aiming at a field to lab to field approach. Achieving this, particular the last step of delivery demands technology and also education.

Extension is essentially education. Agricultural extension shares knowledge between farmers, communities, researchers and experts, in a participatory manner, with the objective of improving their agricultural production, income, stewardship and quality of life.

They are networks of local experts that work with farmers, processors, marketers and consumers to transfer scientific expertise, agronomic techniques, and best practices, and to improve science through stakeholder feedback.

Providing this education to rural communities in a systematic, **participatory** manner is essential to improving their production, income and quality of life. A century ago, extension services were focused on the dissemination of useful and practical information related to agriculture, including correct use of improved seeds, fertilizers, implements, tillage practices and livestock management. Today that vision has expanded to include the steps in productive agriculture, marketing techniques, and basic business skills to address poverty. It should also include basic health, nutrition, youth development, and domestic information for the benefit of the rural (and even, urban) household.

Plus, the extension service facilitates the sharing of traditional and local knowledge. Modern extension services must increase their capacity for two-way information sharing – between experts in research and farmers themselves who have essential information on farming. Applied agricultural research remains an academic endeavour unless it is

focused on real problems for farmers and efforts are made to deliver solutions to farmers in a manner that is useful to them. Research and extension should be functionally linked and there should be pluralism in the approaches to implementing this form of education.

The ability of farmers to manage risk, have resilience to climate change, and break the poverty cycle relies on knowledge. Extension is also an essential pillar for rural community progress, including support for the organisational capacity of farmers' groups and the formation of co-operatives. Including programming that addresses the unique needs of women farmers is essential in improving extension services.

Equally importantly, the improvement of the economic capacity of farmers provides a considerable improvement in the access to education for rural children.

It is an unfortunate legacy of the past twenty years that extension services were decimated. Just as agriculture faced increasing pressure environmentally, climatically, and productively; vital knowledge-sharing resources were slashed along with development assistance and other resources. At a moment when food security is top of mind, Rio+20 provides a critical opportunity for ensuring that agriculture – including the key role played by extension services - receives the global attention and resources needed to meet multiple worldwide demands.

Best Practices

A knowledge-based approach of best practices that sustain production and minimize the ecological footprint of agriculture requires a higher priority on process innovation. Change in practice is the place where technology and know-how meet.

Best practices include:

- conservation tillage
- animal welfare
- rotational grazing
- manure management
- integrated crop management, integrated pest management, and nutrient management
- plan and manage protected areas together with local farmer, pastoralist and forest communities
- encourage integration of trees, shrubs, grasses and other landscape elements into agricultural production systems
- create on-farm refuge areas for pollinators and biodiversity conservation

To further these best practices we must establish open and transparent two-way exchanges that capture the 'voice of the farmer' in the process of policy formulation and implementation. build upon the indigenous knowledge of conservation and resource management that farmers already possess

We must develop systems that are more decentralized, farmer-led, and market-driven (including local markets). These will further the resilience and adaptive capacity of farmers.

Following the Supply Chain

When we talk about best practices, we are talking about many of the steps that reference the early stages of production.

That includes:

- protecting land, water, and biodiversity
- Agronomics of growing a crop

But there are other things that are needed beyond inputs and production systems.

- Access to basic infrastructure like roads, wells, and sanitation are essential.
- Access to information and communication technologies is essential to provide access to scalable information technologies for farmers, including women and young farmers, to receive weather, crop, and market alerts, as well as other early warning systems, to help them make the right decisions for sustainability and productivity
- Programming is needed on marketing, basic business skills, and primary processing to address poverty in developing countries
- Provide basic technologies like dairy separators, butter churning equipment, chillers, and fibre spinning, and grain milling to allow primary processing
- Concrete measures are required to reduce post harvest losses through proper storage, transportation, and other techniques. Technologies as simple as grain bins can make a meaningful difference in countries where post harvest losses of 30-40%
- Links are needed between rural producers and regional and urban consumers
- Increased awareness of good nutritional and household health practices are required, including among smallholder farmers

Addressing Specific Needs

Substantial gaps in returns for smallholder farmers and the gender inequality exemplified by an estimated 80% of poor farmers being women must be addressed in this process.

Science and technology – traditional and new, basic and sophisticated – offers solutions to many challenges faced by rural women living in poverty. These solutions include labour-saving technologies related to women's domestic and productive work such as:

- water pumps and community water schemes
- improved cooking technologies
- more emphasis on vegetable crop research which is traditionally women's purview
- transport of water, wood and crops
- food processing

Rural women in most parts of the world continue to be underserved by technologies. Because of women's lower education levels, their lesser access to credit, their lack of land tenure and other discriminatory practices, men are most frequently the beneficiaries of new and improved agricultural technologies. The poorest women continue to use labour-intensive traditional technologies or use no technologies at all and that needs addressing in a socially sensitive manner.

Conclusion

Achieving sustainable agriculture requires research, technology as well as improved transfer of knowledge, prioritising locally relevant crops, stewardship techniques, investments in infrastructures and adaptation to climate change. This will ensure farmers benefit from continuously updated and improved tools and knowledge to enable them to successfully achieve all the other step of process.

Every form of agriculture needs continuous improvement and the different production systems have a role to play. The ultimate goal should be to minimize the resources used to produce each crop or kg of protein, and increase the productivity.

Rio+20 can leave a long-term legacy of improved agricultural research and extension services that can be used for the continual improvement agriculture and rural development.