

Brief Summary Week/Theme 4 E-Consultation on Integrated Crop-Livestock System for Development: the way forward for sustainable production intensification. February 22-26, 2010

Building off of the background paper provided at the website <http://www.fao.org/agriculture/crops/core-themes/theme/spi/iclsd>, the discussions during February 22-26 (Week 4) focused on the research needed to generate knowledge and innovative practice to underpin farmer adoption and scaling of promising crop-livestock systems for sustainable production intensification. Looking back over the previous weeks, we were keen to identify key research gaps within on the ground implementation, input and market chains and the policy dimensions.

This week's discussion included some 20 rich contributions that came from experiences in Zimbabwe, Brazil, Kenya, the USA, Ecuador, Bolivia, Colombia, Cameroon, and Ghana among others that provided regional examples and/or global relevance.

As we noted in previous weeks, the summary is intended to highlight points made within the discussions. It is not a synthesis nor is it exhaustive by any means. All of the individual interventions can be found on the website as a blog along with the documents, photos and links that were submitted by participants.

This week's summary is organized according to the questions that were used to prompt the discussion. Our thanks to those who brought additional points made in support of the previous week's topics and these will be added to earlier summaries.

To the responses:

A few comments permeated the conversation including:

- *Practice to Policy.* Several colleagues pointed out that the number of interventions to the e-conference declined as the discussion shifted to policy and institutional and raised the questions as to whether this was indicative of the challenges of working fully within both the practice and policy/institutions realms. Further many colleagues noted the critical importance of ensuring that policy makers have evidence to support innovations in ICLS for sustainable outcomes.
- *Inclusion.* Most participants indicated the importance of strong inclusion of all of the relevant actors particularly farmers and pastoralists but also the range of intermediary actors including those from extension agencies, universities, NGOs, local authorities, public-private fora, socio-economic institutions, researchers from various disciplines, state decision makers, consumers, private sector and processors, among many others. The role of farmer's organizations was noted as of primary importance such that they can negotiate with agricultural government institutions and the bank actors, in order to participate in defining

politics and financial support to the rural sector. Further, with increasingly public concern about the way the food is produced and its effects on the environment, consumers associations play another important role in to the dissemination of the benefits to implement IC-LS.

- *All dimensions.* In general, colleagues pointed out that a focus on production alone is not appropriate. Rather we need to take into account the social, cultural, and economic dimensions and particularly the issue of managing risk.
- *Communication.* Communication and adequate dissemination were highlighted as critical to getting better results in adoption and scaling than historically have been the case.
- *Multi-stakeholder innovation platforms.* There is increasing interest in establishing multi-stakeholder innovation platforms (e.g. the Sub Saharan Africa Challenge Programme (FARA) and ILRI pilots). The success of the innovation platforms, and their ability to scale-up, will ultimately be determined by the ability to learn how to engage the value chain actors efficiently and cost effectively. It will also require change agents who are skilled facilitators among value chain actors.

- If you could secure funding to carry out research on the gaps associated with integrated crop-livestock systems - from your perspective and context - what would you identify as the most critically needed research associated with:

a) On the ground implementation of integrated crop livestock systems? With which actors might you partner to carry this out?

- *Multiple options.* Test a few well-designed ex-ante formulated options that include technical, environmental and socio-economic components. Avoid “packages” but rather opt for the two to three options tried under the same conditions. Don’t be closed to rejected options.
- *Build on what we know and what works.* Build on what is known elsewhere that would be relevant for production and environmental conditions and market options. The importance of examining available information or conducting a fresh study on what has been done before (indigenous knowledge), what worked for the rural farmers and why they were involved in a specific production system as opposed to others.
- *Environmental benefits characterization.* Successful identification of the key limiting elements of systems within the region must first be identified and the research hypotheses should center on how best to optimize crop-livestock balance to meet the opportunities offered within a particular landscape/area setting. An ideal

research focus would characterize the production potentials of multiple facets of a system approach and determine the suite of environmental benefits that might be obtained, as well as identify the turning points where systems might fail and contribute to environmental degradation if not functioning properly.

- *Economic outcomes.* Economic outcomes must be a key element of the research to continuously modify systems in partnership with producers to eventually obtain a robust set of efficient practices that can be selected for a particular region. Research recommendations should be shared among regions to characterize ecosystem services provided by ICLS to identify unique niche opportunities.
- *Several Country specific ideas were put forward:*
 - *From Canada – evidence of economic benefits.* The most critically needed research to fill gaps in the crop livestock systems in Western Canada would be an economic assessment demonstrating the benefits to farmers over the long term. Most importantly, the policy makers need to understand the importance of innovation and sustainability of these systems.
 - *A series of suggested research activities from Cameroon* included those related to valorisation of animals and management of soil fertility, fodder, residue, integration of legumes, timing of pastoral grazing release on crop systems, biomass transfers, stock density, better safeguarding of landscapes/great spaces and agreements among state actors for livestock moments.
 - *From Bolivia, the focus was on:* a) increasing the crop production not only the grain but also the straws; b) developing nutritional strategies for improvement the utilization of low –quality roughages and straws by ruminants for productive purpose; c) optimizing the availability of nutrients from the fermentative digestion, microbial growth in the rumen and rumen metabolism.
 - *From Brazil it was recommended to address the problems* associated with the existing harsh climatic conditions and soil quality have been observed in the Mid-North.
- *Risk Management and Innovations.* "Production" is not synonymous with "profit" and/or "risk management". Minimizing risk, and then optimizing production within the risk constraint sphere, will be an approach more likely to resonate with poor farmers. Tom Thurow presented a gradient of conditions around minimizing risk and optimizing production/profit and sensitivity studies are needed of the reliability of the innovation under variable conditions/assumptions over time).
- *Extending the messages.* The potential to have increased production/profit/risk management would be greater had there been better application of what was known 20 years ago about mixed farming systems. Innovations were never

effectively disseminated. Rhetoric of extension agencies (often at all levels) must match the needs of diverse clients. Indigenous knowledge was replaced with new knowledge” and that useful risk-averse methods were ignored.

b) The human and social dimensions of these systems? With which actors might you partner to carry this out?

- *The right practices/products for the users.* Are children and women equipped to undertake the activities involved in integration? Is the addition of livestock to on-going cropping or horticultural or gardening system going to increase the work load of a category of household members? Are the benefits worthwhile in comparison with labour inputs? On the demand side, are consumers ready for products coming from integrated systems? Are they prepared to pay additional for what is perceived by producers as better products from integrated systems?
- *Supporting farmers’ goals.* This human social dimension should focus on how to promote adoption of truly sustainable ICLS in light of farmers’ goals and what incentives and policy support will be needed.
- *Multiple dimensions.* Research questions will be related to those on markets, consumer preferences, household characteristics, environmental issues and concerns. Actors include socio-economic institutions and, public-private fora with interest in crop-livestock agriculture, urban/inner-town production systems, etc.
- Several country specific ideas were put forward including:
 - *From Cameroon* - safe the access and the sustainable exploitation by users, clarifying synergies of and incentives for the diversification of systems – between sedentary and pastoral land users.
 - *From Bolivia* - The economy based on used of large and unproductive lands (latifundios) has reduced drastically the forest area, and resulted in inefficient land use (low cost and exportation of soybean or sugar). ICLS should allow for the rational use of the land based on ecological concepts and the democratic access to the poor people to it.
 - *From western Canada – good alternative.* A crop-livestock system which can lower cost of production for both the livestock production and crop production is a practical and sustainable alternative for small and medium sized farms in western Canada. Data is needed to prove to policy makers that the current system of support programs need to be changed to encourage farmers to use the crop livestock integration practices that will lead them to sustainability.

c) Enhancing market chains or incentives to production? With which actors might you partner to carry this out?

- *Income matters.* Market constraints and politics have influenced the implementation of specialized crop or livestock systems rather than its integration. Farmers are looking not only to maximize production but also in some way to increase their income.
- *Engaging industrial actors.* The industrial actors like slaughterhouses, food processing companies, supermarkets and others, which are following consumers' expectations, are key actors in the added value chain. They should promote prices contracts (according to quantity and quality required) with the farmers and on the other hand, the government should have a policy of economic incentives to those ICLS, which are demonstrated to be less polluting to the environment.
- *Access to markets (and removing subsidies).* Enhance access of agricultural products of developing countries to the markets in the industrialized countries, especially those markets associated with organic or ecological products. The developed countries may have to look critically at and possibly remove the agricultural subsidy on their products.
- *Which comes first – markets or production systems?* Should markets drive the type of production system employed or should a sustainable production system influence how markets develop as a response? Can farmer activities to achieve sustainability override market prices, and if not, then how can policy instruments be used to support economic, environmental, and social sustainability? For market chain development to be successful it will require a grassroots movement, innovators in agricultural industry and well informed policy makers.
- *Ecosystem services.* It is necessary that markets are developed for environmental services which can increase the income of innovative producers.
- *Storage.* Farmers are often encouraged to increase production with incentive packages, which increase production leading to seasonal glut on the market with a fall in producer prices – overall a disincentive. Appropriate storage is needed.
- *Multi-stakeholder innovation platforms.* Belated recognition that those practices that did not get taken up tended not to add value to the input supply-production-processing-marketing value chain explains the recent increasing interest in establishing multi-stakeholder innovation platforms such as the Sub Saharan Africa Challenge Programme (FARA) and ILRI pilots. The success of the innovation platforms, and their ability to scale-up, will ultimately be determined by the ability to learn how to engage the value chain actors efficiently and cost effectively. It will also require change agents who are skilled facilitators who are able to help the value chain actors get the information they need, when they need it and in the form that is useful to them.

- *Analysing systems constraints.* There are integrated crop-livestock systems across a range of types (on-farm or area-wide) and scales in different agroecologies. Are there system-dependent input supply chain constraints (e.g. seeds of certain legumes, equipment and machinery for minimum soil disturbance and direct seeding, herbicides, livestock feed for specialized systems, etc.) that need to be addressed? Which are these and how have they been or might they be overcome?

- What are the gaps in evidence required to frame a policy intervention or to influence policies or institutional elements that can advance integrated crop-livestock systems.

- *Clarify policies that work against ICLS.* Research can analyze the current and past government policies that have worked against scaling up of ICLS and the design of “friendly” policies.
- *Research relevant to policy impacts on farming systems.* It is vital that integrated crop-livestock system research be specifically designed to be policy relevant.
- *Systems approach.* It is necessary to understand the System Analysis Approach at different levels.
- *Addressing broad sustainability goals.* Research information on the benefits of crop-livestock integration as a means of reducing rural poverty, rural-urban drift and environmentally sustainable production system could provide the necessary evidence which must be sold to policy maker for a change in policy direction. Nutrition objectives, concerns and considerations need to be more prominently taken into account by agricultural and rural development planners in guiding agricultural and poverty reduction policies and programmes. With only five years left until the 2015 deadline to achieve the Millennium Development Goals, it is clear that a focus needs to be on small and medium scale farmers.
- *Understanding and narrowing the “nutrition gap”.* The gap between what foods are grown and available and what foods are needed for a healthy diet – can only occur when national policy makers and members of the international development community recognize that attempts to reduce malnutrition solely via increased production of staple crops are not enough. Agricultural development policies and agricultural development programmes that address food *and* nutrition security are an essential step in reducing malnutrition; they enhance national prospects for improved labour productivity and economic growth, and increase the chances of long, healthy lives for even the most vulnerable.
- *In western Canada – the costs of support programs.* Governments in the developed countries will need significant proof showing the costs to the farming systems that have come as a result of the support programs they have put in

place. The programs have guided farmers into specialized systems, which rely almost completely on commercial inputs.

- *In Ecuador – agroforestry.* Agroforestry activities fall between the Ministries of Atmosphere and Agriculture. Political reforms must be examined to promote the Agro-forestry as an integrated system, within a multipurpose strategy of resources, paying attention to the improvement of the institutional structure for the development of markets of tree products and support to the efforts of research, extension and promotion of farmers.

- How might the research community respond to the structural constraints of carrying out interdisciplinary, multi-institutional and multi-stakeholder efforts? What can donors do to assist in ensuring robust research efforts?

- *Just do it.* There are no easy solutions, but sometimes well-established researchers without regard to potentially political repercussions simply have to “just do it”, because it’s the right thing to do. Getting the right team for full cooperation under stressful conditions will not be easy. Securing funding for such broad goals is a challenge. Pursue robust research agendas to make progress in getting meaningful results.
- *Think and invest long term.* Research should have a longer-term vision of the possible futures of small scale crop-livestock enterprises and their evolving opportunities and constraints in response to a series of drivers. Most recent forward-looking publications have 2030-2050 horizons. What is our vision of the future of small-scale farms by then? What are the possible pathways out of poverty for small-scale farmers and their families? By 2050, it is imagined that many farming systems will have drastically changed and it is hoped that the next generations will have more livelihood options and off-farm opportunities. Donor institutions or organization including the FAO should be conscious of the work involved and the long-term time span required to carry out research effectively.
- *Let farmers critique.* A new paradigm shift is required where the range of actors is expanded, analyses of the research questions opened up for scrutiny and beneficiaries perspectives sought.
- *Research should help better targeting and setting of priorities.* Which priority systems do we want to support which criteria are needed? Some include: focus on small scale crop-livestock enterprises; addressing food security, nutrition security and poverty alleviation; systems with potential for quick and large returns (markets,...); chance of success (measured by livelihood, macro-economic indicators, environmental impact).
- *Adaptive research should provide the methods, approaches, and tools to put into better use past research findings, existing knowledge and ex-ante analyses.* Realistic and workable assumptions for scaling-out need to be developed along with fostering institutional changes and integration of ‘crop’ and livestock related policies at local, national, regional and global levels.

- Please share any other thoughts on this topic or previous topics that will advance our discussions and thinking.

- *Food and nutritional security.* Food systems should be so designed and implemented that they address nutritional needs. The integrated crop-livestock sector offers practical opportunities for achieving this at national, sub-national and smallholder level; increasing the diversity of crops and of the livestock can close not only the production gap or the yield gap by symbiotic mutualism or literal cross-fertilization, but can also close the “nutritional gap” by providing a broader range of nutritious, micronutrient-rich, seasonally available supplies of a variety of diverse foods (including those of animal origin) whose consumption can optimize diets - very relevant both for net rural producers and consumers including smallholders.
- *Summary thoughts - Redirecting ICLS.* The various parties that shape the directions of agricultural development have succeeded in driving it down the wrong roads. These ICLS systems are disappearing very rapidly in developed countries and beginning to follow the same route in developing countries due to market forces and the policies and services put in place by governments are all pushing towards greater scale and specialization in farming (crops or livestock; large scale livestock operations). One of the reasons is that no one - other than future generations - has to pay for the negative externalities associated with much of the technology on which this “modernization” A second reason for what, on the face of it, would seem to be an undesirable development trajectory, is the now almost universal separation of “livestock” from “agronomy” (reflected in multiple international organizations as well). We are now left with a situation in which the principal guardians of the kinds of integrated crop-livestock systems that we would like to see expanded are farmers who, for one reason or another, have resisted the pressures to abandon them, and who have taken it upon themselves to experiment, innovate and, in some countries, become successful promoters of improved systems.
- *Potential next steps for FAO.* Perhaps one of the best things that FAO can now do is to support the emergence of strong associations experiment, innovate and, in some countries, become successful promoters of improved systems of crop-livestock farmers around the world, helping them to make the case, nationally and globally, for policies and programmes that favour the expansion of integrated systems and encourage the sharing of experiences and innovations. As was the case in the follow-up to last year’s workshop on Conservation Agriculture – in which most of the innovations have also come from farmers - a first step in this direction could be the incubation of a Community of Practice that would ultimately emerge as a self-sustaining institution run by its members.