The Cereals and Legumes Group Ethiopia

Proceedings of the Third Cereals and Legumes Group Workshop
Wheat Value Chain – Bread and Durum
8th October 2015, Addis Ababa, Ethiopia

The main purpose of the Cereals and Legumes Group is to bring together agriculture sector stakeholders to share lessons learned and emerging good practice

Introduction

The Cereals and Legumes Working Group was launched as a joint initiative between the USAID Agriculture Knowledge Learning Documentation and Policy (AKLDP) project and the Netherlands Development Organization (SNV). In recent months the organizing committee has been expanded to include the Ethiopia Institute of Agriculture and the Ministry of Agriculture. The primary purpose of the Group is to bring together policymakers, researchers, project implementers, agriculture extension specialists and private sector agricultural enterprises to share new thinking, lessons learned and emerging good practice in the cereals and legumes subsector. In this way, it is planned to accelerate the dissemination of knowledge and learning, promote good practice, and inform and influence future agriculture growth policy and strategy directions.

The third Group meeting was held on 8th October 2015 on the theme 'Wheat Value Chain – Bread and Durum'. It was structured around a total of eight presentations of innovative work, a question and answer session, group work and a plenary discussion. The presentations have been circulated to the participants and only summary information is presented here.

Welcome Address

Dr. Asnake Fikre, Ethiopian Institute of Agricultural Research (EIAR)

Dr. Asnake started his address by emphasizing the government's commitment to meeting local demand and achieving self-sufficiency in the wheat sector. He drew the audience's attention to the EIAR's objectives in this respect: technology development, irrigation, and encouraging links between agriculture, industry and NGOs. He also highlighted the importance of "the fight against rust", extension services, and the need to scale best practice, before welcoming participants to the meeting.

Opening Speech

Mr. Tesfaye Megiste, Extension Directorate, Ministry of Agriculture

On behalf of Mr. Tesfaye, the Crop Research Extension Director, Mr. Abduselam, delivered the opening speech.

He opened the workshop by noting the important work of the Cereals and Legumes Working Group, and its progress in building a strong network. He continued with an introduction to the theme 'The Wheat Value Chain', underscoring the strategic importance of wheat in the nutrition and livelihoods of the people of Ethiopia. He noted that while Ethiopia could be a net exporter of wheat, it presently imports significant quantities. In this regard, he welcomed the range of topics being covered during the workshop, and observed that it was both timely and relevant as the government was working towards putting its Growth and Transformation Plan (GTP2) into action, and was developing a national 'Wheat Value Chain Strategy' to bridge the gap between the supply of and demand for wheat.

The workshop was both timely and relevant, as the Government of Ethiopia was working towards putting its Growth and Transformation Plan (GTP2) into action

Overview of Wheat Sector in Ethiopia

Mr. Esayas Lemma, Ministry of Agriculture and Natural Resource

Mr. Esayas introduced the first of the eight presentations by highlighting the importance of the wheat sector to the Ethiopian economy, most particularly to smallholder farmers. For example, more than 4.8 million smallholders participate in wheat cultivation across the country, while wheat contributes some 12 per cent of daily per capita intake (smallholders consume 60 per cent of the wheat they produce).

Wheat contributes 12 per cent of daily per capita intake, with smallholders consuming 60 per cent of the wheat they produce

He then examined Ethiopia's wheat growing areas (which cover approximately 1.6 million hectares), in terms of geographical location, altitude and share of total production in the country's regions (Oromia, Amhara, SNNP and Tigray). Mr. Esayas went on to demonstrate that there has been a constant shortfall in local wheat production – with production consistently lagging behind consumption – over the past decade. While wheat cultivation has increased over time, technical constraints include a shortage of crop varieties suitable for different agro-ecological zones (AEZs), disease, weeds, water-logging (highlands) and drought (lowlands). Improved wheat production is further hampered by socioeconomic constraints, such as lack of improved inputs, draft power and credit. As a consequence, wheat imports – through the Ethiopia Grain Trade Enterprise – have risen significantly since 2005. These imports provide 'safety net' stocks and are sold at subsidized prices to help ensure stable food prices.

Constraints to wheat production include a shortage of crop varieties suitable for different AEZs, disease, weeds, water-logging and drought

Overview of Wheat Research in Ethiopia

Mr. Zerihun Tadesse, Kulumsa Agricultural Research Center

In the second presentation, Mr. Zerihun provided an overview of the wheat sector, stating that wheat is Ethiopia's fourth most important crop by area and its third most important by production. Although productivity remains low, there has been a 64 per cent increase in wheat cultivation in less than a decade. Some 20 per cent of wheat is marketed. Using graphs, the speaker also looked at the land area under wheat production, growth in production compared to other cereals, and wheat yield potential and consumption.

Ethiopia has a suitable environment for wheat cultivation, and it is both a marketable and exportable crop

Despite production increases and achievements, Mr. Zerihun confirmed that wheat imports are rising at an average of 9 per cent annually. He also demonstrated some of the factors that affect wheat productivity: biotic stresses (disease, weeds), abiotic stresses (water-logging, low soil fertility, drought) and technical and socioeconomic constraints. He observed that wheat research is important because Ethiopia's environment is suitable for growing, and wheat contributes the highest calorie intake to the population compared to other crops. Wheat also provides the highest diversity of food products, and is both a marketable and exportable crop.

Mr. Zerihun went on to outline the vision and objectives of the National Wheat Research Program (NWRP), which are to achieve national wheat self-sufficiency and food security, with the extended aim to be the leading wheat technology, knowledge and information source for Africa. It aims to achieve these goals by developing appropriate, productive and high-quality wheat technologies, knowledge and information to enhance sustainable productivity.

NWRP seeks to provide high-yielding seed varieties across research areas

The speaker then provided a brief explanation of research coordination among the more than 26 collaborating centers in NWRP, as well as outlining the ten thematic areas. In terms of approach, the Program aims to be multidisciplinary, gender sensitive, agro-ecology based, participatory and client oriented/demand driven. Breeding objectives include providing a high, stable and good-quality grain yield across research areas, as well as offering resistance to biotic and abiotic stresses.

The past decade has seen a significant increase in released wheat varieties

During the next part of his presentation, Mr. Zerihun introduced some strategies employed by the NWRP to reach farmers with improved, high-yielding seed varieties: the fast track RR wheat variety development strategy; and the wheat seed multiplication strategies (two methods). In this respect there have been some major achievements, including a significant increase in released wheat varieties, particularly in the last decade, and a number of awards – for example, the National Science, Technology and Innovation certificate in 2012 for problem-solving research on rust-resistant wheat varieties and the 'Gene Stewardship Award' in 2014 for success in combatting rusts.

Nonetheless, potential gaps and challenges remain, such as there being limited varieties for diverse AEZs, maintaining continuous cultivation of susceptible varieties, and recurrent rust epidemics and gene breakdown. The speaker also highlighted the limited availability of good-quality breeder and pre-basic seed in sufficient quantities.

Finally Mr. Zerihun summed up his presentation and outlined some recommendations for the future. These included breeding for durable resistance, creating an AEZ-based variety deployment strategy and, most importantly, avoiding dependence on a few varieties that quickly become susceptible to disease. Other future approaches might include

'technology shopping', use of modern tools for the most important problems (such as disease), and support for rapid seed multiplication and distribution. The speaker also hoped to see improved facilities and human resource skills to help enhance research capacity.

CIMMYT Wheat Research for Development in Ethiopia
Dr. Bekele Abeyo, CIMMYT-Ethiopia Office

On behalf of Dr. Bekele, Dr. Kindie Tesfaye commenced the talk with a brief overview of CIMMYT (the 'International Maize and Wheat Improvement Center'), which has offices in 14 countries and employs more than 700 research and support staff. Its mission is to: "Sustainably increase the productivity of maize and wheat systems to ensure global food security and reduce poverty". The Ethiopia Office collaborates on areas such as germplasm supply, capacity building, natural resource management and socioeconomic research.

More than 30 million Ethiopians have benefitted from the work of CIMMYT and its partners to date

CIMMYT and its partners develop wheat systems through joint technology generation. Dr. Kindie told the workshop that more than 5 million households (30 million Ethiopians) have benefitted from increases in production and productivity as a result (improving food security), and from the better nutritional security provided by bio-fortified wheat.

Achievements in germplasm supply have fed into a doubling of wheat productivity in the past 40 years

The speaker went on to highlight some achievements in germplasm supply, which have fed into a doubling of wheat productivity over the past 40 years. During this period, thousands of germplasm have been introduced annually, with more than 5,000 wheat germplasm released and tested jointly with the national agricultural research system (NARS) in recent years. Dr. Kindie then presented figures demonstrating that 70 per cent of wheat varieties developed and disseminated under NARS have originated from CIMMYT (a total of 88 varieties to 2014).

During the next part of the presentation, Dr. Kindie summarized CIMMYT's work helping to build the physical and human capacity of NARS. Strategies in this respect have included the provision of field machinery, buildings, vehicles, irrigation systems and office/lab equipment, along with both short- and long-term training, mentoring and student supervision.

He next went on to outline the Center's work with partners, with a spotlight on its collaboration with the Ethiopian Institute of Agricultural Research (EIAR) to address climate change. Here tasks have included analyzing past climate change, downscaling and analyzing future (2015 to 2030) climate conditions and trends, building a national daily climate database (1980-2050), and supporting national climate change adaption initiatives.

The country now has a comprehensive rust surveillance monitoring system in place

The speaker underscored another area of CIMMYT's work with partners: as part of a global initiative to address one of the most serious constraints to wheat production, rusts (especially stem and yellow rust). There have been recurrent epidemics in recent years, and evolving new races, yet Ethiopia now has a comprehensive rust surveillance and monitoring system in place, benefits from international laboratory collaboration and support, and has an emerging disease early warning system. Nonetheless, a long-term strategy is required to address this recurrent threat, including rapid replacement of super-susceptible cultivars, and the need to strengthen links between research and extension via awareness raising and training.

The wheat rust challenge

In the final part of the talk, Dr. Kindie outlined a way forward by building national research capacity with new tools and techniques, and continuing to further strengthen CIMMYT's good relationship with national agricultural research systems and other partners. He also highlighted the importance of improving crop management to close yield gaps and "taking generated technologies to farmers".

Wheat Seed System in Ethiopia

Dr. Abebe Atilaw, Technology Multiplication and Seed Research Directorate, EIAR

Dr. Abebe's introduction to the next presentation comprised an overview of wheat production in the country. The cereal crop is grown by nearly 5 million smallholders and is increasing in terms of both areas under wheat and total production. However, most wheat is produced by resource-poor farmers, and challenges exist for supply to meet demand. For example, projected population growth in Ethiopia will cause a large spike in demand, yet harvested areas could be shrinking, climate change is becoming more apparent, and resources are coming under increased pressure (due to land degradation and reduced factor productivity, among others).

As part of the overview, the speaker also examined Ethiopia's wheat production potential. He looked at the country's average potential, the potential of 'model' farmers in the most productive regions, and provided some international comparisons. Using maps, he also discussed potential areas for surface- and groundwater irrigation.

Dr. Abebe then moved on to the central theme of his presentation: a wheat seed system for the country. In presenting the topic, he first provided a breakdown of the Ethiopian seed sector – of informal, intermediary and formal seed systems, and their constituent groups and actors. He outlined achievements of the seed system, its progression to complex, decentralized institutional arrangements, and enactment and coordination of seed policy and laws. The speaker also mentioned the many current actors in seed delivery (including public and private seed companies), and the development and revision of seed quality standards.

Ethiopia's seed sector has progressed to having complex, decentralized institutional arrangements, with many stakeholders involved in seed delivery

He next addressed the theory of change in wheat variety development and seed production, looking first at the percentage of bread wheat (67%) and durum wheat (33%) released varieties, along with some recent examples. Here the speaker made a comparison between conventional breeding and the fast track variety development strategy, before looking at accelerated seed multiplication. With extensive use of figures and graphs, Dr. Abebe then highlighted approaches in the accelerated seed multiplication and dissemination scheme, with reference to the four years 2009 to 2013. He presented source seed multiplication of seed varieties by EIAR during 2014/15, and looked at certified seed performance during the four years of Ethiopia's Growth and Transformation Plan (GTP), 2010/11 to 2013/14.

Demand for seed has outstripped supply in recent years, with this mismatch becoming increasingly marked

With additional extensive use of graphs and charts, the speaker demonstrated how demand for seed has outstripped supply in recent years, with this mismatch becoming increasingly marked – despite a match in 2010/11 as wheat seed supply improved (both federally and by regions) in that year. Further infographics highlighted the amount of certified wheat seed produced in 2014/15, share of wheat varieties during 2010/11, and the wheat certified selling price from 2010 to 2015. Dr. Abebe moved on to further explore the mismatch between demand for and supply of seed, comparing certified seed demand and area coverage for each region during 2012/13. He showed that during the period 2005/06 to 2009/10, supply caught up with – and even outstripped – demand, although improvements in distribution were less marked. There were even surplus supplies (of maize and wheat) in 2012/13.

The speaker concluded with observations on the key challenges of the wheat seed system, which comprise a shortage of quality source seed, rust epidemics, lack of improved varieties for all agro-ecologies and poor methodologies to assess demand. Further barriers include poor facilities, quality control and marketing mechanisms.

Rust never sleeps

There is need for a long-term strategy to mitigate wheat rusts and for promotion of decentralized seed production

The way forward in meeting these challenges will require effective, long-term interventions, and a long-term strategy to mitigate wheat rusts (by, for example, crop diversification and promoting durum wheat). Finally Dr. Abebe highlighted the need to promote decentralized seed production to reach diverse wheat agro-ecologies, consideration for expanding irrigated wheat to boost production, and the importance of a strong partnership between EIAR and stakeholders and international agriculture research centers.

Technology Upscaling and Knowledge Management in Wheat: Experience from the Eastern Africa Agricultural Productivity Program (EAAPP)
Dr. Alemayehu Assefa, EIAR

The fifth presenter, Dr. Alemayehu, introduced his topic with an overview of EAAPP, a World Bank-supported project that operates in Ethiopia, Kenya, Uganda and Tanzania. It focuses on four commodities (wheat, rice, cassava and diary), and in Ethiopia's case is looking to establish regional centers of excellence for wheat production by sharing technology and promoting policy harmonization.

The speaker outlined how the Program delivered technology upscaling via four guiding principles. First, an inventory of available technologies is carried out for each EAAPP commodity, with the most suitable ones identified for each intervention and region. The second principle involves the joint planning and monitoring of both research and extension activities, including needs-based preparation of training materials and training of extension staff. Third, input planning takes place, such as seed varieties required by AEZs, and the amount of seed and fertilizer required by variety, followed by timely delivery of these inputs and corresponding training, as required.

The final principle comprises "the effective use of all technology delivery pathways". This takes place through demonstration of technology, innovation and management practices

Community-based seed multiplication (CBSM)

Timely monitoring and the provision of technical backup

to farmer research extension groups, and also through capacity building for farmer training centers. Implementation is based upon an agreed action plan, is participatory (rather than taking a 'top-down' approach), and includes the sharing of experiences and feedback among farmers and extension staff. This fourth principle also employs community-based seed multiplication (CBSM), which ensures that seed of the right variety goes to the right place, and selected demonstration varieties are multiplied. Seed quality is guaranteed and there are no surpluses.

Dr. Alemayehu brought the audience's attention to some key outcomes from this approach: it has improved adoption of more sophisticated technology, with wheat productivity improving by 1 to 1.1 tons per hectare; and wheat productivity has also increased from 1.5 tons per hectare from the baseline to 4.4 tons per hectare in EAAPP intervention areas. In addition, over the period 2010 to 2014, there is empirical evidence that the average income of adopters was higher by 35–53 per cent than that of non-adopters in project areas. In 2014, 97 per cent of targeted households were found to be using improved wheat varieties, while even non-beneficiaries have better net incomes – via scaling out effects and transmission of benefits to neighboring communities.

EAAPP has been successful because of its participatory approach and by ensuring timely information flows and implementation of activities

In summary, then, the speaker emphasized that while technology delivery pathways are not new, EAAPP has been successful because of its participatory approach to planning and implementation, and as a result of its ensuring timely information flows and implementation of planned activities. The key lessons his wished to share with the meeting in this respect were that project governance should be sensitive and responsive to issues that arise, and that timely monitoring and provision of technical backup are crucial if systems are to work properly and be successful.

Experiences of Ethio-Italian Development Cooperation: Durum Wheat Value Chain Project in Oromia

Mr. Genene Gezu, Italian Development Cooperation

Despite high demand, the cultivation of durum wheat has been almost totally replaced by soft wheat

Mr. Genene commenced his presentation with some background information on the durum wheat and pasta sector. In particular, he wished to emphasize that although durum wheat is in high demand (for traditional recipes, pasta foods, semolina), its production has been almost totally replaced by soft wheat. Some 640,000 tons of durum wheat are required annually (19 per cent of Ethiopia's total wheat production), with much of this now having to be imported. The speaker said that the national challenge, therefore, is to substitute hard wheat importation by local production of durum wheat in Ethiopia's potential wheat growing areas.

He moved on to outline the objectives of the Agricultural Value Chains Project in Oromia: "supporting farmers' cooperatives and local institutions across the value chain to produce high-quality and quantity durum wheat and enable premium prices from pasta processors to farmers". This is in the face of challenges early in the chain, such as poor post-harvest handling and management; traders having to source grain from large numbers of scattered farmers; lack of data on prices and standards; poor linkages among actors; lack of storage facilities; and poor financial mechanisms.

The speaker next introduced the audience to the project's partner institutions and stakeholders – executing agencies in Oromia, development partners from Italy, and farmers being targeted in cooperatives and unions in Bale – before summarizing the project strategy. In essence this involves focusing on key segments of the value chain (quality maintenance, aggregation and pricing), capitalizing on existing experience and mobilizing relevant stakeholders. The Project also hopes to achieve smallholder commercialization through cooperative marketing, with targeted investments along the chain and promotion of results to further expand the value chain approach. Within this strategy, the intention is to embrace all aspects (seed multiplication, grain production,

Durum wheat harvesting

harvesting, selling etc.), involve and strengthen all key actors, and to employ rigorous quality-control methods. Additionally, the plan involves the progressive scaling up of activities and involvement of new actors. Mr. Genene made good use of diagrams and photos to further expand upon the Project's strategy to build capacity for research and extension services, and for cooperatives, unions and other stakeholders.

Durum wheat seed and grain is now being locally produced in Oromia, with innovative grain supply contracts introduced

The speaker then highlighted progress and achievements that have come out of the Project. Using graphs, he demonstrated that durum wheat seed and grain is now being locally produced. Innovative grain supply contracts have been introduced between cooperatives, unions and pasta factories, while a tripartite agreement (union, industry, bank) was signed in 2015. Independent quality testing is also now taking place at the Sinana Agricultural Research Center.

Mr. Genene observed that conducive agro-ecological conditions and the attractive market being provided by agro-industries is now forcing farmers in some districts to shift much of their land to the production of durum wheat. Additional indicators of achievements include improved houses, investments in vehicles, stores etc. and increasing numbers of farmers opening savings accounts. In terms of promotion, meanwhile, awareness-raising and networking workshops have taken place, along with field days, study tours and a conference and expo in December 2014.

Towards the end of his presentation, Mr. Genene examined opportunities to further improve durum wheat production. These include a government strategy to strengthen local supply and import substitutions, the increased willingness of development programs to operate value chain systems, and the cooperative structure that already exists in wheat zones. Yet challenges remain in the form of the need to improve awareness and build capacity; weak market information systems; lack of financing/ credit for value chains; maintaining quality control as scale increases; and pressure on farmers during harvest, storage and marketing periods. With the increasing demand for durum wheat – due to population growth, increasing demand for pasta foods and expansion of pasta-making industries, among others – the gap between supply and demand also continues to widen.

The speaker finally turned to lessons learnt from the Project and implications for research, development and policymaking. Key among these was that building capacity among farmers' cooperatives can serve as an important tool to improve smallholder commercialization, market linkages serve as a bridge between producers and industry (increasing rural/urban integration) and that incentives created by industries can encourage rapid expansions in crop (in this case, durum wheat) production. According to Mr. Genene, the crucial policy implications are the importance of promoting such experiences to help develop the grain value chain as a whole, and the need to establish a structured grain-trading system in Ethiopia.

In terms of policy implications, it is crucial to promote experiences to help develop the grain value chain, and to establish a structured grain-trading system in Ethiopia

C4C – Cooperatives for Change: Value Chain Approach for Cooperative Development in Ethiopia
W/o Eyerusalem Regassa, SNV Ethiopia

W/o Eyerusalem introduced the work she is involved in by providing an overview of C4C's main objective ("Transforming union performance, especially in output marketing"), its collaboration with partners and local actors (unions, cooperatives, farmers in Oromia and Amhara), and key commodities. C4C looks to deliver its objective by helping to make

Field days

unions 'bankable', building management and staff capacity, and by providing support to financial administration, business planning and marketing.

Unions and cooperatives face constraints in output marketing due to lack of management capacity, poor access to technologies and financial limitations

After providing some geographical context, W/o Eyerusalem discussed some of the gaps and constraints facing cooperatives that are part of Ethiopia's wheat value chain. These include: lack of management capacity, lack of access to post-harvest technologies and financial constraints. Further along the chain, they encounter input (pesticides, starter seeds) shortages, poor market information, and limited storage and transport services – all of which limit performance in output marketing.

Sector support is provided through research collaboration, extension and organizing cluster meetings to help set priorities

The speaker then moved on to outline some activities of the C4C team to address these issues. For example, sector support is provided through research collaboration, extension and organizing (national, regional) cluster meetings to help set priorities. Business development is also encouraged via backing to improve financial and human resource management, to creating union business plans, and to further member involvement and commitment. Finally, training is delivered to farmers on improving productivity, post-harvest handling and marketing. Here W/o Eyerusalem used an example diagram depicting the Oromia wheat business cluster.

She then underscored some lessons learned under C4C. These include the importance of knowing the market – knowing what type of seed variety buyers want, knowing who to sell to and producing what has sold in previous years. Other lessons are having the right inputs, and the importance for cooperatives and unions of having access to working capital, along with capable management and a strong finance system. Sourcing/procurement should also be cost effective and competitive, with clear procedures and access to market information.

In concluding her presentation, W/o Eyerusalem summarized some of the advantages of doing business with unions and cooperatives – i.e. that there is a short and traceable supply chain, quality control takes place at source, and there is higher percentage value addition for smallholder farmers.

Nonetheless, challenges also exist, such as maintaining sufficient working/ operational capital to pay farmers, storage capacity and transport, management challenges (understanding markets and contractual obligations) and ensuring good communications between actors.

Wheat Value Chain: Lessons learned from the Agricultural Growth Program-Agribusiness and Market Development (AGP-AMDe)

Dr. Zewdu Yilma, Wheat Value Chain Team Leader

Dr. Zewdu Yilma introduced the final presentation by giving an overview of the objectives of the AGP-AMDe: to support improved seed development, expansion and availability; market enhancement and linkages; technology introduction; technical and financial support to post-harvest handling technologies and warehouses; and support to cooperatives, business service providers etc. He also highlighted the Program strategy: "stimulating farmers' cooperatives and unions and agribusinesses within the value chain".

He then spoke about the importance of wheat as a crop in Ethiopia, its contribution to caloric intake, and the growing gap between domestic demand and supply. In fact imports of wheat are an issue for Africa more generally. In 2010, African countries spent more than US$2.5 billion on wheat imports, making the region highly vulnerable to global market and supply shocks. Africa currently produces just 40 per cent of domestic wheat demand. With increases in wheat consumption and urban population growth, the problem will likely become worse in the future.

Africa currently produces just 40 per cent of domestic wheat demand, with this situation projected to become worse in the future

The speaker moved on to outline the Program focus and strategic goals for the Wheat Value Chain. These are first to increase production and productivity, and also to increase the volume of quality seed. Importantly, the third goal is to increase the volume of high-quality wheat available to the industrial sector. The two final goals are to reduce post-harvest losses and increase farm income.

Multipurpose portable thresher

With these objectives in mind, capacity-building trainings have been carried out in the Wheat Value Chain, while market linkages have been facilitated between producers and processors/ large volume buyers. Linkages have also been established between the Ethiopian Grain Trade Enterprise (EGTE) and the unions. A further activity carried out by the Program is seed multiplication: technical support has been provided to 20 seed grower cooperatives and private seed growers to enable them to become service providers. Dr. Zewdu presented a table of figures detailing area covered per region and the number of beneficiaries of this particular activity.

Technical support has been provided to 20 seed grower cooperatives and private seed growers to enable them to become service providers

He then spoke of the Program's work introducing technology – for example, introducing and popularizing multipurpose portable threshers – and providing grants to support the purchase of basic seed, tractors, a seed warehouse, a processing plant and irrigation equipment, among others.

Further opportunities arise in the Wheat Value Chain as a result of Ethiopia being the largest wheat producer in Sub-Saharan Africa, and because of its suitable ecology, interested partners, and due to the presence of skilled human resources and international and local organizations.

To date there have been a number of key impacts of the AGP-AMDe Program. These include building farmer networks in agricultural skills, helping smallholders use improved technology, facilitating approx. US$90 million in agribusiness loans, and providing training and strategic investment to 51 farmers' cooperatives and unions (FCUs). Additional impacts of the Program are the provision of technical support to help improve productivity and processing, and to facilitate local and international market linkages. Finally, the Program has established vital partnerships, developed innovative training on nutrition, and has improved gender equity by increasing women's participation in FCUs for more than 45,000 new female members.

The Program has improved gender equity by increasing women's participation in FCUs for more than 45,000 new female members

Dr. Zewdu concluded his presentation by acknowledging key partners, and informing the meeting that challenges and constraints faced by the Program would be presented during the discussion session.

Group work

The question posed for the group work was: "Despite impressive increases in wheat productivity in Ethiopia over the last decade, the EGTE continues to import significant amounts of wheat which is sold at subsidized prices. What are the five priority investment interventions that are required to sustainably increase productivity in the period of the GTP2 [Growth and Transformation Plan] that have the potential to slow and reverse the current rising levels of wheat imports? Are there other investments that can be made at the smallholder farmer level that will reduce total variable costs, boost total output, and improve gross margins and farmers' income?"

The groups presented the following recommendations on priority investment interventions:

1. Both groups agreed that expansion of total wheat production volume is key to meeting growing demand. This could be achieved through vertical intensification of production in the rainfed highlands, by using appropriate, improved and sustainable technologies, supplemental irrigation, etc., to increase productivity per unit of land.

Expansion of total wheat production volume is key to meeting growing demand

They also suggested horizontal expansion – increasing land size to be brought under wheat production, e.g. to irrigable lowlands, and by expanding cultivable land through supplemental irrigation.

2. Investment in research to generate improved technologies (breeding, crop management techniques, crop protection [from disease, insect pests, weeds], early warning/ forecasting measures, etc.).

There needs to be support to improvement of the seed supply system

3. Supporting the improvement of the seed supply system, including both formal and informal arrangements. Demand-driven seed production, multiplication, supply and distribution are necessary, with partnership arrangements between public and private seed producers. Important related factors include certification, quality control, demand-supply gap analysis, and ensuring strengthening and technical support for the informal seed system.
4. Investing in the introduction and better use of farm machineries – the use of large as well as small-scale machineries and modern techniques/ technology in order to enhance mechanized wheat production. Clustering farmers was another suggested option for better use of mechanized farming.

Support should be provided to improve smallholder efficiency and help increase gross margins

5. Addressing market access and linkages, value chains and policy issues (through taxation, incentives, subsidies, etc.). For example, support and incentives could be provided for the importation/ manufacture of farm machinery. Coordination and information/ knowledge management are also important for all stakeholders – to enable cooperation and shared goals, efficient resource use and the scaling up of best practice.

Although there was broad agreement between the two groups on these points – particularly the need to increase wheat production, improve mechanization, further develop the seed supply system and address market linkages/access – there were some differences of priority and emphasis. In addition, Group 1 emphasized the need for investment in research to generate improved technologies, while Group 2 highlighted the importance of policy support, coordination, and knowledge and information management.

Suggested investments/ work at the smallholder farmer level were as follows:

- Investments in tillage, fertilizer use, water use, transport, etc. in order to improve smallholder efficiency (Groups 1 and 2).
- There is a need to invest in shortening the input and output market chain (Group 1).
- Investments in storage facilities that help maintain product quality and minimize damage from insects, diseases, rodents etc. to minimize post-harvest losses. There is also a need to minimize product loss due to poor transportation systems (Group 2).
- Investment to help increase gross margins. At the smallholder, cooperative and union levels, farmers have to use cost-minimizing activities while running their business to enhance optimal benefit (Group 2).

Finally, one crosscutting issue was recommended: the need to address the challenges of **climate change adaption** (Group 1).

Closing address

Dr. Kindie Tesfaye Fantaye, CIMMYT

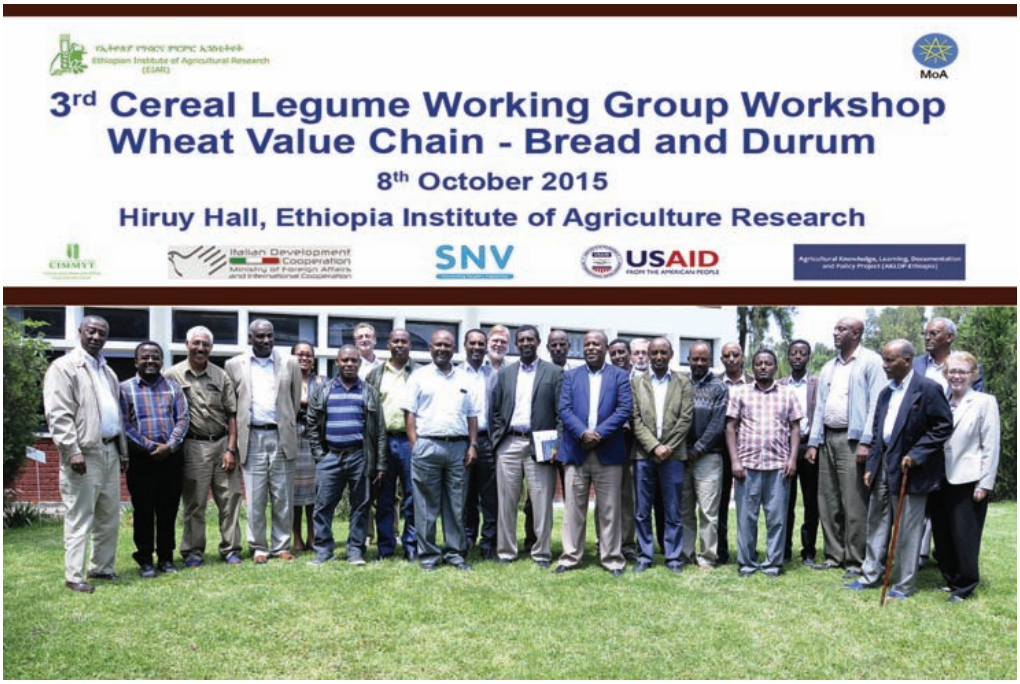
Dr. Kindie provided the closing speech, thanking the Agriculture Knowledge, Learning, Documentation and Policy (AKLDP) for organizing this timely (in light of GTP2) event and

bringing so many important stakeholders together to discuss common issues and share experiences and lessons. He gave his own view on the five priority investment interventions:

1. New technology to address problems such as rust, linking wheat breeding with the seed system,
2. Improving wheat crop management at different levels (research, extension, farmer),
3. Addressing input/output market issues through value-chain and other approaches,
4. Research and development efforts to exploit lowland areas for (irrigated) wheat production, and
5. Continued capacity development of NARs, the extension system and farmers.

Dr. Kindie also agreed that climate change adaption was a crucial crosscutting issue. In addition, he emphasized that the points highlighted in the meeting should be communicated to the relevant offices (MoA, EIAR crop research directorate etc.) for action and follow-up.

Dr. Kindie closed the meeting by thanking all attendees for their active participation and making the workshop a success.



Annex1: Ethiopian wheat production, consumption and imports 2001–12