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International Maize and Wheat Improvement Center

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Newsletter of the Nutritious Maize for Ethiopia (NuME) Project

ICT-supported awareness creation on American Army Worm (Fall Army Worm, *Spedoptera frugiperda*)

In collaboration with Federal Ministry of Agriculture and Natural Resources and Agricultural Bureaus of the four big Regional Governments, the Nutritious Maize for Ethiopia (NuME) Project of CIMMYT and Farm Radio International (FRI) have created awareness and disseminated knowledge on technologies and practices related to quality protein maize (QPM) for more than five years using Information and Communication Technologies (ICT).

CIMMYT D.G Martin Kropff, inspects one of the NuME field demonstrations scouting FAW larvae.

Without a doubt, American Army Worm (AAW) is a pest that poses a serious challenge to smallholder farmers of Ethiopia who are growing maize and other cereals, not only due to its propensity for destruction, but largely due to the lack of knowledge and experience related to the pest, as it is new to the country. The smallholder farming system in Ethiopia is characterized by low external inputs and relies largely on indigenous knowledge of crop management practices, especially in regard to crop protection. When it comes to AAW, as the pest is a new arrival, the maize farmers have no indigenous knowledge on the nature of pest or how to manage its attack. For the same reason, natural enemies that can reduce the pest population below threshold levels are also not available. The development of natural enemies to a pest is a time intensive process that requires coexistence of the pest and potential predators or parasites in particular environment.

Martin Kropff, Director General of CIMMYT, was briefed on the status and potential damage of AAW during his visit to Ethiopia in April. He also visited some of the field demonstration plots where the pest was observed and has been controlled by spraying pesticides. During his visits to offices of major CIMMYT partners in Ethiopia, Kropff raised

Also in this issue

The Nutritious Maize for Ethiopia (NuME) project is implemented by CIMMYT in Ethiopia and funded by Global Affairs Canada. It is designed to help improve the food and nutritional security of Ethiopia's rural population, especially women and children, through the adoption of quality protein maize varieties and crop management practices that increase farm productivity.

Global Affairs Canada
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Sasakawa Africa Association
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the issue of AAW as a serious threat to Africa's maize production to the Minister for Agriculture and Natural Resources, H.E Ato Eyasu Abraha, and the Director General of the Ethiopian Institute of Agricultural Research (EIAR), Fentahun Mengistu.

AAW was first identified in February 2017 on an irrigated maize farm in the southern part of Ethiopia. In less than four months, the pest had spread to all of the major maize growing areas of the country. Since then, CIMMYT-Ethiopian has been involved in different AAW related initiatives organized by the Federal Ministry of Agriculture, the UN's Food and Agriculture Organization, the American Embassy and other institutions who have stakes in maize production and the national food security of the country. Produced by about 62% of grain-producing farmers, maize is the most popular and productive cereal in the country and any problem like AAW that affects the crop can drastically affect the national grain production volume. Attached to its native habitat, America, it has been agreed that the pest will be named the "American Army Worm" in Ethiopia.

The spread and extent of AAW is a concern to the country's food security, so the Ethiopian Governments and other stakeholders pushed NuME and FRI to do something that reduces the damage caused by the pest. Accordingly, to counteract the problem posed by an invasive pest, radio-based awareness and pest-management knowledge dissemination is being implemented by FRI, which was been deemed to be an appropriate intervention. The content advisory panel of the NuME radio campaign, with representatives from Ethiopian Ministry of Agriculture and Rural Development called a meeting at the end of June 2017. At the meeting, along with the usual QPM-focused program, the panel decided

American Army Worm larvae collected by hand picking and killed by suffocation (SNNPR, Basketo Special District). Photo: Abraham Mulatu.

to include AAW-focused information and management options for controlling the pest. NuME broadcasted three thirty-minute episodes twice a week during the month of July 2017 in collaboration with Amhara, Dimtse Woyane Tigray, Oromiya, and South Radio Stations. These radio stations have the potential to reach a large audience in Amhara, Oromiya, SNNPR and Tigray regions, which grow about 90% of the total maize in Ethiopia.

The radio program included an integrated an Interactive Voice Response (IVR) system. The IVR helped to rapidly collect concerns and experiences of farmers related to the issue from wider areas. More than 500 callers from Amhara, Oromiya, SNNPR, and Tigray regions have participated in two weeks' time. Broadcasters interviewed concerned farmers and the voices of farmers that shared their experiences in controlling the pest were shared through radio programs. ■

Neighboring farmers coming together to control AAW by hand picking of larvae. Photo: Abraham Mulatu.

Application of Modern Tools to Link Demand and Supply of QPM Seed

The Nutritious Maize for Ethiopia Project is an intervention that contributes to the national effort of achieving food and nutrition security through development and dissemination of new maize varieties with enhanced nutritional content and their agronomic practices.

As radios are owned by about 66% of the farm households, and 61% of spouses either own or have access to radios, the NuME project considered radio a common and gender-balanced means of disseminating information about the quality protein maize technology and its nutritional benefits to the rural household. Since 2013 with the participation of the extension service, NGOs, health services and the broadcast media, the NuME project has been implementing radio campaigns to increase QPM utilization and thereby nutrition. Designing and implementing various innovative approaches, FRI in collaboration with four regional broadcasters (Amhara Mass Media, Dimtse Woyane Tigray, Oromiya Radio and South Radio) in Ethiopia has been successfully discharging this responsibility. Program formats included magazine, mini-drama, phone-in, vox-pop, beep-to-vote polling, and beep-for-vox applied in a way to ensure farmer participation.

The participatory radio campaign has taken the issue of QPM beyond the project woredas (districts).

A survey of radio listeners conducted in 2016 in Amhara, Oromiya, SNNPR and Tigray regions showed that farmers were not able to get QPM seed even if they had the willingness to plant it. On the other hand, seed producing bodies held stocks of unsold seeds regardless of the small volume of production. As a result, seed suppliers frequently expressed their dissatisfaction. The question here was if ICT could contribute to solving this problem and reconciled supply and demand to improve the nutrition of the community.

FRI proposed an ICT platform whereby radio listeners and seed suppliers could share relevant and timely information related to seed supply and demand. The proposal was enriched by the comments of journalists, researchers and seed suppliers. The system worked by integrating radio, telephone and internet. It was implemented during the peak input supply and distribution

Nesra Adem, a female radio journalist, interviews a farmer while plowing his land. Photo: W.Gojjam Zone.

time, April to May 2017. Farmers got information about characteristics of QPM varieties available in the market through radio and access to phone numbers of specific QPM variety seed supplier representatives in their regions by calling to special short codes assigned for each region. The suppliers who participated in this system were Amhara Seed Enterprise (ASE), Ethiopian Agricultural Business Corporation (EABC), Gadisa Gobena Commercial Farms (GGCF), Meki-Batu Union (MBU) and Oromiya Seed Enterprise (OSE).

These suppliers sold considerably greater volume of QPM seed compared to the previous year's sales with the help of this platform. Representative from ASE said that in this year, demands came from almost all parts of the region and they were able to sell more than 60 q of seed, which was very large compared to previous year's sale of around 50 q. The owner of GGCF also said that this year he had sold all QPM seeds and even the carryover from the previous year's production. The ICT platform helped seed suppliers to be more close to the farmers. Representatives of seed suppliers received an enormous number of direct calls from farmers who listened the radio program and needed QPM seed. Representatives from MBU said that the system created great opportunity to closely discuss with farmers and they recommended it as a system to be scaled up. These all showed that ICT can be used for linking demand and supply of QPM seed beside the regular campaign targeted only on QPM related information dissemination. ■

CIMMYT and EIAR DGs visited NuME and Highland Maize Field Demonstrations

With the EIAR Director General, Fentahun Mengistu, Martin Kropff visited some of the NuME and highland maize varieties filed demonstration plots implemented by CIMMYT and the Ambo Plant Protection Center of EIAR.

The EIAR director general explains the importance of maize at a NuME demonstration plot.

Both DGs appreciated the joint EIAR-CIMMYT effort to improve production and nutrition in the highlands of Ethiopia. Talking to some of the host farmers, the DGs learnt that most farmers in the vicinity are impressed with the productivity of improved technologies of both maize and wheat and express their interest to grow the quality protein maize due to its productivity and nutritional advantage.

Field and food demonstrations are one of the most important group information dissemination techniques used in agricultural extension to persuade farmers to try new varieties and their agro-techniques. NuME has been carrying out a large number of field demonstrations every year to prove quality protein varieties are superior or doing as good as the improved conventional maize varieties common in the project's target woredas. Food demonstrations are also executed to farmers to show that QPM can be prepared into different food products and tastes as good as or even better than the food prepared from conventional maize, and acquaint the farming communities with the different types of maize/QPM based

foods consumed in different parts of the country and how they are prepared.

Field demonstration plots are visited by farmers at different growth stages of the crop and also field days are organized at the appropriate time, where performance evaluation and comparison between the QPM and conventional maize is possible and serves as a forum to make a choice for the most adapted QPM varieties to their condition. Generally field demonstration plots are a more practical and effective means of communication to transmit knowledge, skills, and to give the opportunity to farmers, officials and policy makers to see, hear and learn what has been said about the QPM technology.

The total number of demos planned to be implemented in the 2017/18 cropping season by different partners was 264 in the 36 target woredas of Amhara, Oromia, SNNPR and Tigray. About 131 field days were also planned, with an expected number of participants of 54,300 farmers. Six QPM varieties namely BHQPY545, BHQP548, MHQ138, Melkassa 6Q, AMHQP852, AMH760Q and their conventional varieties BH540 and BH660 were planted across the country, according to their ecological adaptation. The number of demo plots hosted by men, women and farmers training center (FTCs) was 99, 31 and 23, respectively. All demos were planted as planned and most demos are performing well. A few demos failed due to low moisture problems at and after planting, especially in SNNPR. Infestation by the American armyworm was observed in some kebeles, in addition to some other pests such as cutworm and smut that appeared in SNNPR.

Before the start of the actual field level operation, pre-season trainings for 378 trainers and local officials were organized at different locations of the project areas to insure proper design, implementation of the field demos and collection of relevant data. Similarly, mid-season trainings are being organized and more than 190 trainees (SMSs, DAs, supervisors and woreda officials) are expected to participate.

Field days have been organized both at kebele and woreda levels; the former is to be organized for several times at different periods starting from green cob stage until at least majority of farmers in the kebele visit the demos. In the kebele level field day, farmers come in smaller groups and take time to ask questions, discuss and learn anything about the varieties from the DAs and SMSs. The woreda-level field day is organized for the purpose of creating a forum where farmers, officials, professionals and media participate so that farmers get answers to their questions from the concerned personalities. Some of the field days are accompanied by QPM-based food products. To increase women's participation in the field days, this season there is a strong commitment to increase the number of "only women" field days. This incentive is also for farmers that come to field days along with their spouse.

Questions raised during field visits include: availability of seeds in the required quality and quantity on time and for affordable price; market for the grain; whether the different QPM varieties differ in their nutritional value; drought and disease tolerance level of the varieties; possibility of saving seeds for planting the next season, etc. Each question raised by the participant farmers was addressed by an appropriate person, and discussions were chaired by officials. ■

A QPM field demonstration hosts a farmer along with Martin Kropff and other CIMMYT and EIAR staff.

Accelerating adoption of QPM varieties through smaller seed packets and private distributors in Ethiopia: a Pilot study by CIMMYT's NuME Project

In Ethiopia, the public seed sector is the main producer and supplier of maize seed, and thus has little concern for operational inefficiencies and losses.

Most of these big companies are very interested in distributing seeds to a major central location, to larger markets than in remote and less accessible locations where most smallholder farmers live. Therefore, it is important to distribute QPM seeds through private distributors who are responsive to market forces and are able to take advantage of seed demands in remote areas that are usually neglected by big seed companies.

Nearly all seed companies in Ethiopia sell maize seeds in 12.5 kg bags, which are meant for half a hectare plot. However, the average landholding for most Ethiopian smallholder farmers is much less than that. Farmers who own farm plots less than half a hectare will have to find someone else who would share the seed or obliged to buy extra seed against their interest only because seeds are supplied in bagger bags. Furthermore, farmers need to produce new varieties on small area until they are sure the performance of the new varieties being promoted. For those farmers, seed packaging must be provided in small sizes. Therefore, it is important to facilitate QPM seed marketing through private distributors, and in smaller seed packages that suit farmers' needs.

To this end, the project is currently undertaking rigorous activities to disseminate QPM seeds through private agro-dealers in smaller packaging bags; to facilitate QPM seed marketing through private distributors by supporting and linking them with big seed companies; to try out and evaluate the impact of various seed packages on the volume of QPM seed sales and future demands; and to evaluate farmers' satisfactions of both QPM distribution and marketing through private distributors versus public seed companies and smaller seed packs compared to the conventional 12.5 kg bag.

During the 2016/2017 cropping season, the two major seed companies, Amhara Seed Enterprise and Oromia Seed Enterprise agreed to supply QPM seeds in smaller packs to private distributors who work with them as part of the NuME pilot study. To comply with the Ethiopian seed policy, the two seed companies were provided a subsidy by the NuME project only for the extra cost of labor & baggage for packing QPM seeds into various smaller packs, i.e., 2 kg, 3.125 kg, and 6.25 kg.

To assess the adoption impact of QPM seed distribution through smaller bags and also through private enterprises vis-à-vis the public ones, the two seed companies agreed to provide QPM seeds both in the new smaller packs and conventional 12.5 kg (control) packs to four private distributors assigned at current market prices based on the weight and variety packed. ASE provided QPM seeds for three primary cooperatives in various packages while OSE provided QPM seeds in the new, smaller packages as well as conventional 12.5 kg to one private agro-dealer.

In May 2017, the NuME Socio-economics team visited the three primary cooperatives in Amhara region and the private agro-dealer in Oromia region. The team provided them with extra promotional leaflets on QPM, and also a data collection sheet to record data the amount of total seed bags sold by QPM variety and baggage and comments from farmers who come to buy QPM about the new packs against the conventional 12.5 kg bag. The project also signed a contractual agreement with each on the amount of subsidies it will pay for the QPM seeds sold by the primary cooperatives and the agro-dealer.

The three primary cooperatives in the Amhara region; two from Bure district one from Jabi Tehnan, and one private agro-dealer from Oromia region, Sibu Sire district, were given an orientation on the way to collect data from the customers on the data collection sheet and how to use the visual posters and leaflets, which were all prepared in the local languages to be distributed to their potential customers.

The next activities by the NuME socio-economics team include monitoring and evaluation of the performances of the distributors from their record books on the amount of seed bags sold by QPM variety and package and comments from farmers who come to buy QPM about the new packs against the conventional 12.5 kg bag as well as assessing the impact of various seed packages on the volume of QPM seed sales and farmers' satisfactions through farmer survey and analysis of distributors' inventories. ■

News Seed Technologists received training on seed Production and Business Management

A second joint training on the maize seed system was organized by the Drought Tolerant Maize for Africa Seed Scaling (DTMASS) and NuME projects. This training was the 9th maize seed system training organized by CIMMYT - Ethiopia since the start of the two projects. NuME alone offered five, DTMASS offered two and jointly two trainings were offered.

In 2016, maize production and productivity hit a new height in Ethiopia. According to the 2016/2017 agricultural sample survey data released by the Central Statistical Agency of Ethiopia, maize productivity reached 3.7 t/ha and correspondingly the production rose to 7.8 million tons. Maize crop yield gains can be further increased by improving seed technology and crop management practices. Maize seed production in Ethiopia is increasing, but critics point to issues of low quality seed.

The seed production and business management training was given as part of technical capacity building for CIMMYT partners for three days, 14th-16th August, at Adama rift valley hotel. The training was attended by 31 trainees (all men) drawn from public and private seed enterprises, farmers' cooperative unions and research institutes. The event had nine trainers, eight from CIMMYT based at the Kenya, Harare and Ethiopia regional offices and one from Ministry of Agriculture and Natural Resource, Ethiopia.

The striking aspect of the training was nearly 90% of the trainees had not participated in any of the similar trainings organized by CIMMYT before. As is in many of the sectors, staff turnover has been a major challenge to the seed sector and some proportion of the quality deterioration in certified seed is attributed to a shortage of skilled staff. The economic growth observed during the last few decades in the country created recruitment opportunities for experienced staff who can easily compete to join new companies or offices seeking better pay and working environments. Similarly, the younger generation, due to dissatisfaction with pay structure, mismanagement, unfair reward and promotional systems looking for a greener pasture also aggravate the turnover. In such a situation, continuous capacity development of this type to give knowledge and skills to new staff is of paramount importance.

The training encompassed different aspects of seed production and management: identifying suitable varieties, producing early generation seed and sustainable supply, assuring seed quality, managing MLN and producing MLN free seed, improving productivity through use of better agronomic management, marketing, selling and promotion, understanding seed processing/conditioning, managing complaints & customer service, communicating in the seed business and considering gender issues in the seed business. The training was accompanied by different exercises, demonstrations and learning to use simple but efficient software developed by CIMMYT that helps to determine the minimum quantities and areas of breeders and basic seed required to produce the certified seed production goals for different types of hybrids in planning seed production.

The training had the following objectives: (i) enhancing technical skills of experts from partner institution on seed production and quality control in relation to genetic and physical quality; (ii) creating awareness of agronomic management, control of biotic and abiotic stresses that adversely affect maize seed production and quality; (III) increasing partners' awareness of the seed business cycle, seed value chains and seed promotion and marketing; (IV) increasing awareness and knowledge of partners on gender sensitivity, improved varieties and promotion approaches that enhance seed sales; and (V) enhancing the communication abilities (written and photography) of partners in promoting improved maize varieties and advancing seed sales.

At the end of the training, a brief reflection section was set to hear their feeling on the training. Participants said they appreciated the continued support of CIMMYT in the area of seed technology that made a huge impact on maize seed availability and rated the organization of the workshop as very good. Comprehensiveness of the training and the level of competence of the trainers were also appreciated by all who gave feedback. They also expressed commitments to scale up the knowledge they got from the training by organizing mini-trainings to staff that didn't receive similar training at their respective institutions with the help of the manual and power point presentations they were provided with. ■

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This is a quarterly newsletter produced by the NuME project, a six-year project that aims to contribute significantly in reducing malnutrition, especially among young children, and increase food security and household income of resource-poor smallholder farmers in Ethiopia through the widespread adoption, production and utilization of QPM.

Supported by Global Affairs Canada, NuME is implemented by CIMMYT in collaboration with the Ethiopian Institute of Agricultural Research, Ministry of Agriculture, Ministry of Health, Ethiopian Health and Nutrition Research Institute, Sasakawa Africa Association, Sasakawa Global 2000, other NGOs as well as universities and public and private seed companies.

The contents of this newsletter revolve around the day-to-day activities that the project and its stakeholders undertake by focusing on strategies such as demonstrating to farmers new QPM technologies, improved crop management practices, post-harvest handling and processing as well as improving their knowledge and skills.

Comments and articles from our readers, particularly the staff of stakeholders, are welcome.

CIMMYT - The International Maize and Wheat Improvement Center - is the global leader in publicly-funded maize and wheat research and related farming systems. Headquartered near Mexico City, CIMMYT works with hundreds of partners throughout the developing world to sustainably increase the productivity of maize and wheat cropping systems, thus improving global food security and reducing poverty. CIMMYT is a member of the CGIAR System and leads the CGIAR Research Programs on Maize and Wheat, and the Excellence in Breeding Platform. The Center receives support from national governments, foundations, development banks and other public and private agencies.

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