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Importance of Global Effort in Reducing and Preventing Postharvest Loss

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ABSTRACT

Postharvest loss is identified as a leading factor in contribution to world hunger. In order to combat it, many researchers and experts in the field spend their time learning about causes of postharvest loss, and potential solutions for it. In October of 2015, in Rome, Italy, these experts were given the opportunity to share their findings with each other at the First International Congress for Postharvest Loss Prevention. The goal of the congress was to create a roadmap for reducing and preventing postharvest losses, which was achieved within the three days. In the future, a continued global effort in reducing and preventing postharvest loss is necessary in accomplishing long term goals surrounding the problem at hand.

INTRODUCTION

Although postharvest loss is a prominent factor contributing to world hunger, it does not invoke the urgency or dedication that it deserves. A problem much larger than the small group of people currently working to solve it, postharvest loss and its impact goes unknown even in areas that it most affects. The problem occurs from mistakes made with crops throughout the production chain. This can include postharvest losses from drying or storing crops, transporting them to other parts of a state or country, or from final processing and retail at a crop's final destination. Mainly, this loss causes a problem for developing countries that are struggling to feed their growing populations. Planting more food is a beginning way to solve the problem, but it is ineffective if waste occurs in processing and

distributing methods as well. The solutions are plenty and they may seem simple in theory, but implementation is continuously the barrier between theoretical research and impact on the community.

DILEMMAS IN POSTHARVEST LOSS

Experts on postharvest loss are the ones focused on solving it, but the majority of others do not even realize the potential impact it has on society. The future of food security depends on this concern, and on spreading awareness and importance of it. With reduction of postharvest loss, developing countries will have the resources to improve food availability, nutrition, and poverty among stakeholders in the farming industry. At the first World Food Conference in 1974, postharvest loss was identified as a problem, and a goal was set to reduce it by 50%

by 1985. While no progress was made toward the specific goal, the overarching ambition to reduce these losses remained present (Affognon et al. 2015).

Included in the main concerns regarding postharvest loss is the lack of relevant, prominent, and accurate research. A study reported by Affognon et al. (2015) concluded that research regarding postharvest loss, though increasing, still has a long way to go. It was found that out of all research into this problem, 57.3% of documents included unpublished findings, and 64.7% of all articles found were reported satisfactory versus good or excellent. Lack of methodology for measuring postharvest loss is outlined as another obstacle to solving it by this 2012 study. Reports of postharvest losses from as low as 10-40% to as high as 50-70% were not uncommon in documentation of losses, and most of these numbers came initially from untraceable sources (Affognon et al. 2015). With further understanding of recording postharvest loss and a continuing urgency to spread knowledge about it, energy will be left to focus on the more difficult undertakings surrounding it.

Even with the research being done to reduce postharvest loss around the world, actual implementation of these solutions is lacking. Minimal necessary education regarding postharvest loss in developing countries is a significant obstacle to implementing good solutions. Participants in the production chain sometimes are not even aware of the impact they could be making on the community surrounding them by making harmful postharvest decisions like using low quality grains or neglected storage systems. In addition, a lack of incentives for smallholder farmers, grain traders, and end users contributes to the difficulty in implementation. When stakeholders in developing countries make

a profit regardless of the overall postharvest losses, they have no incentive to reduce them. Without the overall understanding or motivation to make changes in process, solutions for postharvest loss will never be effective.

TRAINING PROGRAMS TO COMBAT LACK OF EDUCATION

The beginning steps are to develop a new education program in Sub-Saharan Africa that will help educate stakeholders involved in all areas of postharvest loss. Research by Chikoye (2015a) conducted at the University of Bolton confirms a training program can significantly help to reduce postharvest loss when it reaches all participants in the production chain. One hundred and fifty grain traders in Zambia, Malawi, and Mozambique were trained through a course developed by the Southern Africa Development Community. Strategically, the training began with these grain traders and was meant to continue through to all stakeholders that it did not reach initially, like large-scale grain traders, smallholder farmers, and other production contributors (Chikoye 2015a).

In these areas, farmers supply their crops to small grain traders who then supply them to larger grain traders in order to widely distribute the product. The type of grain supplied originally by the smaller grain traders usually has potential susceptibility to fungal diseases among other issues that diminish its quality. When the larger scale grain traders are not aware of these impurities, they buy it anyway and pass it along until much of the grain becomes useless during the retail process. The quality of grain is not good enough to be sustained throughout the production chain, so it leads to losses (Chikoye 2015a).

Participants at other levels are not educated about proper storage techniques. Both small and large-scale traders might need to store grains in order to maximize economic profit by selling at higher market prices. Without using proper storage methods, these crops can be easily ruined by pests, humidity, and other factors (Chikoye 2015a).

These are dangerous factors leading to significant postharvest loss in Southern Africa, but it seems to be a simple problem – nobody involved in the crime knows they are committing it. The solution, then, is just as simple – warn the participants not to plant, sell, or buy this grain, and how to properly store it. Instead, participants should be on the lookout for certified traders that have grain which will be much healthier in the long run, leading to less postharvest losses.

In order to test this simple solution, 150 grain traders were trained under the Southern Africa Development Community distance learning program in grain management. The program was originally developed after the agricultural sectors in these areas were liberalized, allowing for the spread of private traders of agricultural commodities. At that point, private traders entering the industry needed a starting mark to learn the basic skills for setting up and running a business as a small scale grain trader (Chikoye & In-Service Training Trust 2015).

The trainees of this program were followed for six months, and observed to be benefitting from the knowledge they gained. Grain traders were more selective in buying grain, which in turn helped encourage farmers to begin planting crops of better quality. They demonstrated a new understanding of what they were buying, and how to store it. Both their sellers and buyers were affected by this knowledge, and everyone was able to learn from each other through the chain. The

training was effective, and would be ideal to spread throughout the country and continent (Chikoye & In-Service Training Trust 2015).

The story of Henrique Colioio of Mozambique is a perfect example of the help this grain management training brought to individual people as well as to the whole community. Mr. Colioio bought 50 tons of maize from farmers during the 2001-2002 season, and stored 30 tons of it for sale later when market prices were to rise. Unfortunately, this maize was destroyed in storage by grain weevils because the chemicals he used for protection against this pest were bought from an unauthorized dealer. Mr. Colioio lost 600 bags of maize that year, simply because he did not realize the importance of buying product from authorized sellers to avoid fraud. The next year, after training with the Southern Africa Development Community program, Mr. Colioio stored 20 tons of new maize and used chemicals from authorized dealers to protect it from pests. He learned to visit the storeroom regularly in order to ensure there were no grain weevils inside the bags indicated by noises coming out of them. In a testimony, Mr. Colioio expressed his gratitude for the knowledge he gained through this training. He explained that it helped him with profits for the first year and beyond, allowing him even to send his children to secondary schools and University. He no longer worried about buying good food and clothes, and was even able to look into buying another truck for the business. This story is a perfect summary of the benefits that a simple education can have on individual farmers or traders, and even on the community that surrounds them (Chikoye & In-Service Training Trust 2015). But how will the education be spread throughout the countries that need it?

THE SPREAD OF EDUCATION

According to Chikoye (2015a), the ideal way to implement this education plan is to begin at the level of smallholder farmers. Farmers should be educated in planting grains of high quality, so that every following stakeholder in the production chain would value the high quality in all products. Farmers would be trained in storage and also packing procedures, so they can both store for themselves and pass the information to other traders they come into contact with. Eventually, the same information would spread throughout areas that need to improve their postharvest practices.

The employment of this plan is a different story. Government departments in Southern Africa are not supportive enough of these training methods, so there is a lack of funding necessary for every smallholder farmer to be enrolled in a training course (Chikoye 2015b). As government is not involved and there is not enough private sector support to sponsor the initiative, education among participants in the production chain is low. For this reason, the vast reduction of postharvest loss that would be possible with a basic training program will not be realized. As Dr. Chikoye says, "We have all the technology, but it is useless without the knowledge and skill set to use it (Chikoye 2015b)".

Other researchers find the importance of education in reducing postharvest loss. Research from the University of Ghana focuses on the importance of education in addition to technological advancements, like storage units or dryers, in order to reduce postharvest loss. The majority of Ghanaian agriculture is currently controlled by smallholder farmers, which make up a small proportion of the total workforce. Plantains and cassava are primary crops in the area, and are commonly transformed into salted chips and flour, respectively. Since processing plants that make this transformation

are located mostly in urban areas far away from the center of rural commerce, these commodities are transported to their final destination. Trucks are stacked with crops, and driven across the country on curvy gravel roads with bumps that contribute to the loss of product. Farmers get the money for their crops either way, and drivers do not have an incentive to transport crops in a more careful way. The participants in this system do not take the initiative to stop the easily-avoidable losses that occur throughout it (Chikoye 2015b).

Similar to the case in Southern Africa, the University of Ghana identifies education as a key role in prevention of postharvest loss. Training begins with a core group of stakeholders and the knowledge will spread throughout and support all smallholder farmers, traders, and processors throughout the region. The idea, says Mammie Hutchful (2015) of the University of Ghana, is that each trainee will spread out and set up processing plants all over the country. When processing plants are more local to the rural areas that they serve, postharvest losses that occur during the transportation of product will be mostly eliminated. The training would also encourage more processing of crops right away rather than storage. This method reduces risk of pests or spoilage during unavoidably improper storage. When training like this is carried out, there are far more people affected by it than its trainees. As the information spreads by word of mouth or by practice, postharvest losses have the opportunity to be significantly lessened (Hutchful 2015, Rome, Italy, Personal Interview). It is clear that development of education is an important factor of postharvest loss reduction, but dissemination of that education is equally essential. With the progress made in terms of education within these two steps, there is even

more work to be done that will ensure proper success: incentives for stakeholders to make these changes.

LACK OF INCENTIVES TO REDUCE LOSSES IS BARRIER TO IMPLEMENTATION

The solutions mentioned seem simple in theory, and have proven to generate success in profit maximization for participants that have dealt with negative effects of postharvest loss. So what is the problem in implementation? There are many disconnects between research and application of proposed methods, but a few of the most important include low incentives.

For instance, Dr. Kathy Baylis discusses these issues in Bihar, India, one of the poorest states in the nation. In this area, 80% of the population is involved in agriculture, and most are smallholder farmers. Research in 64 villages suggested that in addition to the lack of knowledge, absence of incentives keeps participants from taking steps to reduce their own postharvest loss. Farmers and traders exhibited a disconnect in price incentives to store crops after the harvest. Since many smallholder farmers in small villages borrow credit from informal lenders that need their money from sales as soon as possible after the harvest, they have no incentive to store their product. Traders, on the other hand, see storage as an important factor in profit maximization as they can wait until market prices are high enough to sell the stored grains. While all stakeholders reported that moisture content, shattering, and cleanliness are important factors in storage systems, they still do not have an efficient or formal way to test these qualities. End users of the crop are interested in these quality issues, but this concern does not align throughout the rest of the supply chain since participants during earlier stages make a profit regardless of end quality. Without proper

incentives throughout the system, knowledge of new methods will not spread and postharvest losses will not be reduced (Baylis 2015).

According to Dr. Baylis' findings, there are a couple of future action steps to execute. The plans for this upcoming research include continuation in Bihar, with more interviews that will determine the differences in understanding between farmers, traders, and end users. Once the information is discovered, it will be used to connect people throughout the production chain in order to unite in future goals and strategies (Baylis 2015).

IMPORTANCE OF GLOBAL EFFORT

It is pertinent to recognize the requirement of a global effort in order to assist education and incentives for helping to reduce postharvest loss. If the problem stays within local communities suffering from postharvest loss, there will not be enough urgency to create an initiative for change, or to offer the resources these communities need. The world needs to be involved in supporting developing countries so that successful training programs and a boost of incentives are made possible within them.

The First International Congress on postharvest Loss, held in Rome, Italy, in October of 2015 was a first step toward this global effort in reduction and prevention of postharvest loss. With participants from 62 different countries around the world, experts in the field of postharvest loss were able to share hypotheses, methods, and results with each other. At the end of sessions that lasted for two days, the attendees broke into smaller groups to work directly on the problem at hand. The participants had a variety of perspectives coming from different countries and from sectors of the industry ranging between business owners, government officials,

and university faculty. Together, each group focused on one topic: harvesting, drying and storing, transportation, processing, or retail. With stakeholders from all viewpoints, progress was made on identifying the problems within each

REFLECTIONS AND CONCLUSIONS

For me it was the opportunity of a lifetime to witness, firsthand, the volume and quality of research and ideas that were shared throughout the 3-day conference in Italy. I was privileged to meet people from these 62 different countries, and learn about the cultural differences among them. In addition, though, I was able to watch as these cultural differences faded away in order to make room for the problem at hand – postharvest loss, a topic that these people all shared in common. The learning experience, for me, came from observing this transition from separate people with separate backgrounds and experiences into a group that could focus in on one subject of expertise. It helped to solidify for me the idea that cultural differences do not define us, and should not be held in importance before success of worldwide goals.

This Congress represents the kind of global initiative we need in order to solve the impending issues of postharvest loss. Not only do all countries need to be involved in supporting each other to create incentives and spread education of the problem, but people from different areas in these countries must also be involved. We need assistance from government, private sector businesses, academic institutions, and other participants directly involved in the production chain. With the outlooks and connections of all different stakeholders, it will be possible to spread awareness and urgency of the problem at hand, and to enact changes at many local levels that will begin to address the two major issues surrounding postharvest loss. As education spreads and

realm of postharvest loss--to be used in creating the roadmap for reducing it.

incentives are made clear for participants, there will be a gradual but visible decrease in postharvest loss. Working together, it will be possible to reach our world-wide goal of reducing and preventing postharvest loss significantly by 2050.

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