



ADM Institute for the
Prevention of Postharvest Loss

Partnering with the World

Annual Report | 2015

Letter from the Director	5
Executive Summary	7
Research	8
Reduction of Postharvest Loss for Smallholder Farmers	10
Measurement, Documentation and Postharvest Processing	
for the Prevention of Postharvest Losses	12
Feed the Future Innovation Lab	13
Other Research Projects	14
Engagement	16
First International Congress on Postharvest Loss	18
ADM Institute Steering Committee	20
Education	22
Coursera Online Course	24
Student Trips	25
International Training Programs	26







Reducing postharvest losses can significantly contribute in mitigating world hunger problems. With that aim, the ADM Institute for Prevention of Postharvest Loss was established in 2011 with a generous funding support from the Archer Daniels Midland (ADM) Company to improve the livelihood of farmers in developing countries. Since its establishment, the ADM Institute has initiated multiple projects for global postharvest loss prevention and established a strong foundation in research, engagement, outreach, and education. Over the last few years, the institute has partnered with multiple stakeholders all across the world to reduce food losses and combat hunger in developing countries. It is my privilege to bring to you our annual report for 2014-15 with a lot of exciting news.

In 2014, the ADM Institute launched some exciting real-world projects. This report briefly describes our current and new initiatives. Our newest initiative is the “Reduction of Postharvest Loss for Smallholder Farmers” in Bihar, India, where we plan to develop an ADMI Village. Bihar is one of the poorest states of India, with more than 80% of the population dependent on agriculture. Farmers there have a daily income of less than \$1.25.

The project focuses on reducing postharvest losses of major grain crops in Bihar in collaboration with two Indian agricultural universities: Bihar Agricultural University (BAU) and Rajendra Agricultural University (RAU), along with the Borlaug Institute for South Asia (BISA). Dr. Robert Easter, President Emeritus of the University of Illinois and the Chairman of the ADM Institute External Advisory Board, attended the launching ceremony of this project at Patna, Bihar on August 10, 2015. Shri Radha Mohan Singh, Honorable Agriculture Minister of India, senior officials of ADM India, and partner institutions all participated in this event. To further strengthen our efforts in Bihar, we are collaborating with the Information Technology Research Academy (ITRA) of India. The ITRA will provide support to develop communication and monitoring tools for technology interventions, and knowledge dissemination to farmers.

We continue to work in close collaboration with the USAID-funded “Feed the Future Innovation Lab for the Reduction of Postharvest Loss” program with Kansas State University. The project has refocused on PHL reduction research in Bangladesh in partnership with Bangladesh Agricultural University. The institute also expanded its current ongoing project “Measurement, Documentation and Postharvest Processing for the Prevention of Postharvest Losses” in Brazil and is collecting more baseline data of losses at various stages in supply chains.

The ADM Institute has developed and earlier this year launched a free online Coursera course on Global Postharvest Loss Prevention. This is the first course of its kind on PHL reduction, and has attracted more than 6,000 participants from more than 160 countries. The ADM Institute is also continuing support to the Scientific Animations Without Borders (SAWBO) program to develop infrastructure for rapid dissemination of educational animated videos on PHL reduction techniques and practices.

The ADM Institute is organizing the First International Congress on Postharvest Loss Prevention in Rome, Italy on October 4-7, 2015. This Congress is unique in the sense that it will bring academia, foundations, NGOs, government administrations, producers, and others to form a Community of Practice and work synergistically to address urgent PHL issues.

In the coming years, the ADM Institute will focus on transforming and scaling up research outcomes to the community scale, developing further training and education tools, and continue to work in establishing the ADMI Village. This work would not be possible without the support of the ADM Company, members of the External Advisory Board and Steering Committee of the ADM Institute, and our dedicated colleagues at the ADM Institute. We look forward to making significant impact on lives and livelihoods of smallholder farmers in developing countries by reducing postharvest losses. Thank you.

A handwritten signature in black ink, appearing to read 'Prasanta K. Kalita'.

Prasanta K. Kalita



ADM Institute for the Prevention of Postharvest Loss

Preventing postharvest loss is not a project for one country or one organization to tackle alone. To truly resolve the issues and challenges in postharvest loss reduction, various stakeholders in the field of food security around the world must connect and work together to share the information, and identify the appropriate solutions.

As we present this annual report, the ADM Institute is on the cusp of an exciting new partnership with our worldwide community of practice. On October 4-7, we will unite the international postharvest loss prevention community for the First International Congress on Postharvest Loss Prevention in Rome, Italy.

The ADM Institute focuses on four core priorities, and all of our work circles back to them: research, awareness, engagement, and education. These four priorities give us a lens through which we can approach the big challenges of postharvest loss prevention.

Research

In 2014 and 2015, we have focused on developing new partnerships for real-world projects in various developing countries. More details about these projects are presented later in the report.

Reduction of Postharvest Loss for Smallholder Farmers – Bihar, India

One of our newest partnerships has come in Bihar, a very populous and poor state in India. The project will focus on reducing postharvest losses in wheat, rice, maize, and lentil crops in five districts of Bihar in collaboration with Bihar Agricultural University (BAU), Rajendra Agricultural University (RAU), and Borlaug Institute for South Asia (BISA). We are also partnering with the Information Technology Research Academy (ITRA) in India to strengthen the research efforts.

USAID Feed the Future Innovation Lab with Bangladesh Agricultural University and Kansas State University

ADM Institute for the Prevention of Postharvest Loss at the University of Illinois Urbana-Champaign, in collaboration with USAID funded “Feed the Future Innovation Lab for the Reduction of Postharvest Loss” program at the Kansas State University, funded a rice value chain focused PHL reduction research project to the Bangladesh Agricultural University, Mymensingh. The project will help in capacity building to conduct research on detection and remediation of mycotoxins, a major cause of losses of grains during storage. Appropriate drying and storage technologies for smallholders will also be identified, tested, and demonstrated at community level as part of this project.

Measurement and Documentation of Brazilian Postharvest Loss

The institute also continues its research efforts in collaboration with several universities in Brazil to collect baseline data of food losses at various stages in supply chains of corn and soybean in Brazil and testing various hermetic storage options.

Engagement

The ADM Institute engages with actors and stakeholders across all sectors to drive dialogue and decision-making on priorities and action steps for loss prevention. This fall, the ADM Institute and several international partners will host the First International Congress on Postharvest Loss Prevention in Rome, Italy, on October 4-7. The Congress will launch an interactive “PHL Roadmap” which will focus the global network towards achieving significant reductions by 2050. Visit the ADM Institute website to learn more about our partners, collaborators, and advisory boards.

Education and Awareness

There is critical need to create awareness about the PHL issue, and develop training and education tools. The ADM Institute recently launched “Global Postharvest Loss Prevention: Fundamentals, Technologies, and Actors”, via Coursera. ‘PHL 101’ allows learners from all over the world to educate themselves about the issue and challenges of postharvest loss. The ADM Institute frequently hosts visitors for training programs and seminars and delivers presentations around the world. As a university-based institution, the ADM Institute is committed to the development of future leaders. We support experiential learning and student training through study abroad programs, specialized courses, and internships.

ADMI Project Locations

Africa

- 1 Ethiopia
- 2 Ghana

Asia

- 3 Bangladesh- Mymensingh
- 4 China- Henan Province
- 5 India- Haryana University
- 6 India- Madhya Pradesh
- 7 India- Rajasthan
- 8 India- Bihar Agricultural University
- 9 India- Motihari, Bihar
- 10 India- Rajendra Agricultural University
- 11 Myanmar
- 12 Singapore

North America

- 13 Mexico- San Luis Potosi
- 14 United States- Champaign, IL

Central America

- 15 Guatemala

South America

- 16 Brazil- Minas Gerais
- 17 Brazil- Goias
- 18 Brazil- Mato Grosso
- 19 Brazil- State of Sao Paulo
- 20 Brazil- Parana



RESEARCH

The ADM Institute conducts applied, transformational research around the world on how to reduce postharvest losses. In 2014 and 2015, the ADM Institute continued to make several new connections to further projects underway in Asia, Africa, and Latin America. The ADM Institute cooperates with many stakeholders – such as in the newly-launched project in Bihar, India – to help improve the lives and livelihoods of farmers and farming communities.



Reduction of Postharvest Loss for Smallholder Farmers

10

Bihar is one of the most populous and poorest states of India, where about 80% of the population is dependent on agriculture for daily income (average daily income of less than US\$1.25 per day). Like other developing parts of the world, postharvest loss (PHL) is a substantial problem in Bihar, where a significant amount of crop (up to 50%) is lost in the postharvest operations due to lack of knowledge, adequate technologies and infrastructure, poor management practices, and inefficient marketing system.

The value of estimated food losses (only quantitative) in India during 2012-2014 was Rs. 92,600 crore. In January 2015, the ADM Institute initiated a research project "Reduction of Postharvest Loss for Smallholder Farmers" to reduce losses in cereal grains in Bihar, in partnership with Bihar Agricultural University, Sabour (BAU) and Rajendra Agricultural University, Samastipur (RAU). The focus of this project is to identify and implement solutions to reduce PHL by evaluating losses at various stages of the supply chain, identifying appropriate technology interventions, developing loss measurement and quality determination facilities and improving marketing linkages to establish a path in the supply chain to enhance food quality and preservation. The work will focus on PHL reduction in wheat, maize, rice and lentil in the districts of Samastipur Begusarai, Bhagalpur, and Purnea in Bihar, India. In July 2015, the Borlaug Institute for South Asia (BISA) became another partner in the project to extend the activities to Motihari, Bihar. On August 10, 2015, the ADM Institute officially

launched this project in Patna, Bihar, in the presence of Shri Radha Mohan Singh, Honorable Agriculture Minister of India, and other senior officials from the Indian government, Indian Council of Agricultural Research (ICAR), ADM India, and partner institutions in India. Dr. Robert Easter, President Emeritus of the University of Illinois and the Chair of the ADM Institute External Advisory Board attended the launching ceremony.

The first stage of the project, conducting village and household surveys to establish the baseline information about cultural, technological, and economic aspects of postharvest loss in Bihar, is almost complete. A team of 16 field investigators and two research coordinators has been collecting data from about 3,200 households from 64 villages across four districts in Bihar. The household survey will provide basic demographic details, information on household consumption and asset ownership, current agricultural practices, awareness and use of agricultural technology (including posthar-





vest technology), as well as information on the household's access to agricultural markets, credit and public subsidies. The research team is working to identify appropriate drying and storage technologies for smallholders to evaluate and demonstrate at the community level in November and December 2015. The technologies will be scaled up and tested in a large number of villages in the next phase of the project in 2016. To further strengthen the research efforts, the ADM Institute is partnering with the Information Technology Research Academy (ITRA) in India, which will provide support to develop information communication tools required for the project.

This project serves as the foundation towards establishing an ADM Village in Bihar, which will realize a long-term vision of

the ADM Institute. The word "admi" as pronounced (udd-mee) in Hindi, India's national language, means human. The ADM Village is an initiative to expand and scale up the current works of the ADM in Bihar and create an International PHL reduction information, technology demonstration and training hub. The expected outcome and impact of the projects in the ADM Village will be significant in terms of reducing postharvest losses, increasing farm income, empowering women and increasing their participation, intensifying community education, and overall enhancing the lives and livelihood of people.

For more information about the project, contact Dr. Prasanta Kalita (pkalita@illinois.edu) or Dr. Deepak Kumar (kumard@illinois.edu).



Measurement, Documentation and Postharvest Processing for the Prevention of Postharvest Losses

Soybeans and corn are major crops in Brazil, with production of about 73.0 million tonnes of corn and 66.5 million tonnes of soybeans reported in 2011-12. Similar to other developing countries, significant amount of postharvest losses occur during various operations in the supply chain of these crops in Brazil.

Availability of reliable and consistent data on postharvest losses of crops is a major challenge in identifying the priority areas, creating technology interventions, setting policy, and finding solutions to reduce losses. A research team from various departments of the University of Illinois and three universities in Brazil (Universidade Federal de Viçosa, Universidade Federal de Goiás, and Federal University of Mato Grosso) are working on the research project "Measurement and Documentation of Brazilian Postharvest Loss", funded by the ADM Institute.

During the first phase of the project, research activities were focused on determining the extent and economic cost of grain losses at three stages of the supply chain – harvest, transportation, and storage in the Mato Grosso and Goiás states in Brazil. A comprehensive study was led by Dr. Marvin Paulsen, Emeritus Professor in the department of Agricultural and Biological Engineering, to estimate the harvesting losses during combine harvesting of corn and soybean. Eight and 11 different combines were tested for estimating losses during soybean and corn harvesting, respectively, in the states of Goiás and Mato Grosso. The combine losses for soybean ranged from 47.4 to 260.5 kg/ha (1.2% to 5.5% of yield), with header loss as the primary contributor. In the case of corn, total combine losses ranged from 36.2 to 320.6 kg/ha (0.3% to 3.6% of yield). It was concluded that combine harvesting at high moisture (more than 14%) and at low combine ground speed can reduce shattering and stubble losses in soybean, two biggest losses during the harvesting. The careful operation (making needed adjustments) of combine by the operator

can save about 2 bags/ha of soybean (operator hourly value of USD \$238 to \$277/h). As the part of the project, grain monitoring probes were developed to measure logistical aspects of grain handling and transportation conditions (temperature, relative humidity, and carbon dioxide from grain respiration).

The activities in the second phase of this project involve i) exploring the opportunities for future PHL field measurements through a comprehensive survey of smallholder farmers in Paraná state and exploratory data collection in Mato Grosso state in Brazil, ii) determining the best management practices of hermetic storage of soybeans and corn in tropical climates, iii) developing maximum allowable storage time (MAST) guidelines of soybeans and corn, and iv) measurements of PHL during handling and transportation of soybeans. Due to lack of on-farm storage facilities, soybeans are often transported immediately after harvest to storage facilities for drying. Conditions in the grain trailer during transport, which could range from 5 to 125 km and take 0.5 to 30 h, are not well documented but are essential to understand and reduce losses. The grain monitoring probe will be used to measure and record temperature, relative humidity, carbon dioxide levels resulting from grain respiration, and GPS data will be used to describe grain trailer and handling conditions, such as loading, transit, unloading, and waiting times at the farm and at storage facility. This data, along with harvest moisture content and grain classification, can be used to ascertain inefficient handling and transportation practices that lead to postharvest losses and recommendations for reducing these losses.



Feed the Future Innovation Lab for the Reduction of Postharvest Loss – Bangladesh Component

13

The ADM Institute for the Prevention of Postharvest Loss at the University of Illinois Urbana-Champaign, in collaboration with USAID funded “Feed the Future Innovation Lab for the Reduction of Postharvest Loss” program at Kansas State University, funded a rice value chain focused PHL reduction research project to the Bangladesh Agricultural University, Mymensingh.

The project encompasses three main components: i) mycotoxin detection, ii) appropriate drying and storage technologies, and iii) gender issues in postharvest loss prevention. The project is implemented in two locations, Phulpur and Monirampur of Mymensingh and Jessore districts, respectively. In Bangladesh, rice grains are mostly stored in porous gunny bags/sacks. The humid and warm climate associated with frequent rainfall during harvest and storage of moist grains result in mold growth, which leads to the production of mycotoxins. Two of the most important mycotoxins are aflatoxins and fumonisins. This project will help in forming the database through conducting a baseline survey on mycotoxins development in Boro paddy, and will also result in the establishment of laboratory facilities to conduct research on detection and remediation of mycotoxins. Most of the postharvest losses of grain crops happen during the drying and storage operations. Farmers in Bangladesh experienced huge loss of paddy due to delayed or improper drying which estimated 1.56 to 5% in addition to the estimated 14% loss from cutting to storage. It is necessary to adapt adequate drying technologies at the farmers’ level to reduce postharvest losses and produce high quality paddy seed. The efforts from these projects focus to identify suitable and economically feasible household solar and mechanical drying technologies. Another objective of

the project is to compare hermetic storage technologies, i.e., PICS bags, GrainPro super bags, and Keppler-Weber small silos with traditional storage practices, and finally to scale-up and disseminate appropriate storage structures to on-farm households thereby increasing grain quality and improving rural livelihoods.

In the first phase of the project, 200 households in eight villages of Phulpur (Mymensingh) and Monirampur (Jessore) were interviewed using a questionnaire about their perception regarding mycotoxin production in paddy. Grain samples were also collected from each household to determine the moisture content of grain during storage and mycotoxin levels. Two drying technologies, Hohenheim solar bubble dryer (SBD) and a low cost STR dryer, were evaluated for their application in Bangladesh in the first phase of the project. Technical feasibility studies of these dryers are in progress. Two paddy-growing areas of Bangladesh - Phulpur, Mymensingh and Manirampur, Jessore - were surveyed regarding the current storage facilities. On-farm experiments are under progress regarding the use of hermetic storage bags to store paddy and evaluate their performance in terms of reducing losses. For information about the Feed the Future Innovation Lab, visit reducephl.org



Other Research Projects

In addition to the institute's large projects in India, Bangladesh and Brazil, the institute funds many other, smaller projects to address specific problems all over the world. This provides a sampling of the smaller but still important projects supported by the ADM Institute.

Development of an Integrated Stored Solar Dryer and Cooker

Drying is a crucial step in the postharvest processing of grain crops to reduce the moisture content to the safe storage limits. This helps minimize postharvest losses. However, the drying process is energy intensive and can cause quantity and quality losses, especially using traditional methods. Open-air sun drying, the most commonly-used method in developing nations, suffers from limitations, including capacity, labor requirement, contamination from dust/stones, non-uniform drying, losses due to birds/rodents, etc. This project led by Dr. Bruce Litchfield focuses on developing an integrated dryer and cooker using solar energy on a small farm/household scale. The product uses low-cost, readily-available salts that store large amounts of thermal energy when they are heated and change from solid to liquid. Most applications that use thermal energy in the developing world rely on combustion-based processes, often burning solid fuels. The stored solar heat can be used to dry grains, as well as cook meals. The product will be remarkably different in that it uses no fuel, has no flame, and creates no emissions. The expected product from this project will have high value for smallholder farmers in developing countries.

Postharvest Green Technologies for Urban Farms

Fresh market customers demand the highest quality of fruits and vegetables. Proper washing, grading, and packaging is required for all commodities for end users such as wholesalers, restaurants and farmers markets. Proper handling increases the opportunity to grow, store and sell beyond the primary growing season and minimize the losses. The ADM Institute funded this project by University of Illinois Extension educators Sandra Mason and Steve Ayers for developing extension education tools and demonstrating best practices in postharvest loss prevention.

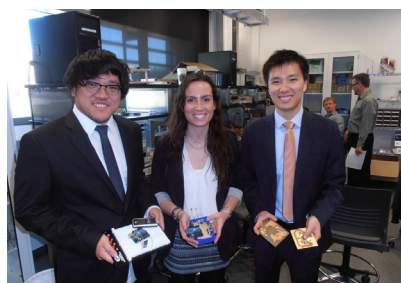
This project is initiated for specialty food crops in the Prosperity Gardens and Chanute Fields near Rantoul, Illinois. Prosperity Gardens is a community garden project on reclaimed urban property in a low-income food desert. Chanute Fields

utilizes an abandoned Air Force base property to provide plots of land for beginning specialty crop farmers and local high school students.

This proposal will demonstrate low-cost solutions and best practices to postharvest loss prevention that can be adapted in multiple settings across the globe.

Wireless Sensors for Smallholder Farmers to Monitor Grain Storage

Dr. John Hart, Beckman Institute and Coordinated Science Laboratory of the University of Illinois, has developed a prototype wireless sensor system in collaboration with Dr. Marvin



Paulsen, Professor Emeritus of Agricultural and Biological Engineering at the University of Illinois. The work involves the implementation of Information and Communication Technology (ICT) to

address the problems with the loss of food due to inadequate grain storage and monitoring methods.

These sensor units are equipped to measure the temperature and relative humidity conditions inside the bags at specified intervals. Sensor units from multiple bags can communicate data to a local hub for storage and processing of the sensor readings from each unit. The hub analyzes the data to determine if the storage conditions are within the expected range for safe storage or if there is a need to alert the farmer. The hub also has the ability to communicate with non-smart phones (common in developing countries) to send messages. The farmer then receives a text message on his or her phone indicating the current grain conditions to determine if corrective actions are needed. This work is part of the "Reduction of Postharvest Loss for Smallholder Farmers" project in Bihar, India.

A Learning Journey with the Rockefeller Foundation

From January 2014 to September 2015, the ADM Institute for the Prevention of Postharvest Loss (ADMI) conducted a project with financial support from the Rockefeller Foundation. Led by Project Investigator Dr. Steve Sonka, the team has focused on 1) learnings of successful interventions along food supply chains for reducing waste and spoilage; 2) what needs to happen to scale promising solutions; as well as, 3) issues, challenges, skills, and capabilities that smallholders, especially female smallholders, need to prioritize.

Over the past year, the project team reviewed previous projects on postharvest interventions. They also conducted a network survey to collect information from postharvest loss professionals on the successful interventions that have resulted in reducing harvest and postharvest loss. The project team further conducted case studies on successful interventions to analyze the elements which led to their success. The cases were suggested by experts or identified through the network survey.

In addition to examining successful interventions, the project team collaborated with Dr. Marvin Paulsen and the Modernizing Extension and Advisory Services (MEAS) team at the University of Illinois to review the principles of storage and extension programs, respectively. Storage has been identified as an important entry stage to mitigate postharvest loss in many major reports, and extension programs are essential in sustaining postharvest interventions.

These principles will be helpful to provide guidance for implementing postharvest interventions. The project team also conducted a review on gender and postharvest loss. Although the gender element has been constantly brought up in development projects, the information is scattered and is usually hidden in projects. The project team aimed to provide a comprehensive review on gender and postharvest loss to fill in the knowledge gap.

The outcomes and knowledge gained from this project will be discussed in a series of blog posts. The first two posts are currently available on the ADM Institute blog, located at <http://publish.illinois.edu/phlinstitute/>.

Sonka talked about some key elements addressed in the project in a video produced for the Alliance for a Green Revolution Forum 2014, located at <https://www.youtube.com/watch?v=fyVXiZ5uBew>.

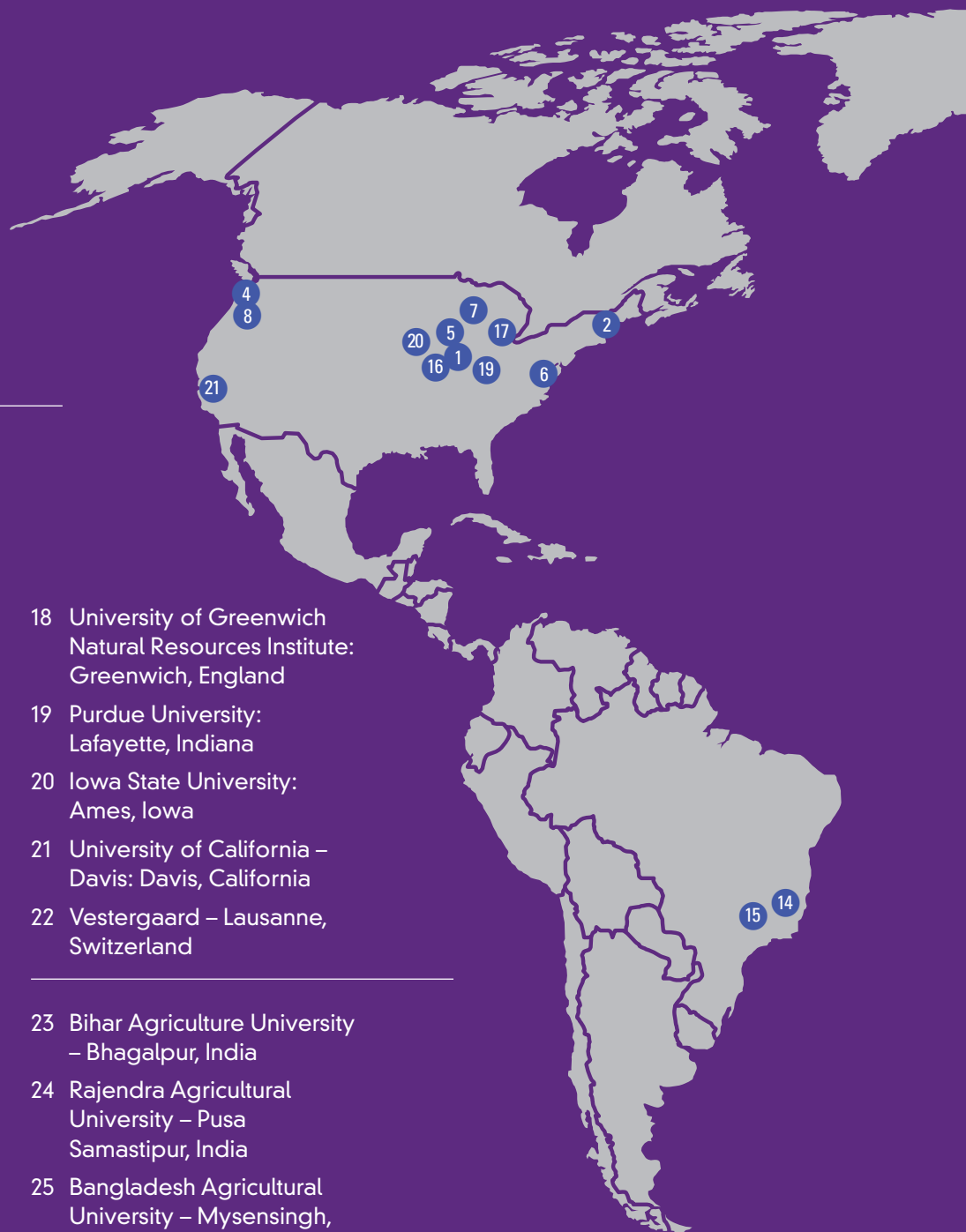


ADMI Engagement Locations

- 1 University of Illinois/ACES, ADM Institute: Urbana, Illinois
- 2 Rockefeller Foundation: Nairobi, Kenya; New York City
- 3 UN FAO: Rome, Italy
- 4 Bill & Melinda Gates Foundation: Seattle, Washington
- 5 John Deere Co.: Moline, Illinois
- 6 McLarty Associates World Bank, World Resources Institute, Department of State, USDA, USAID: Washington, D.C.

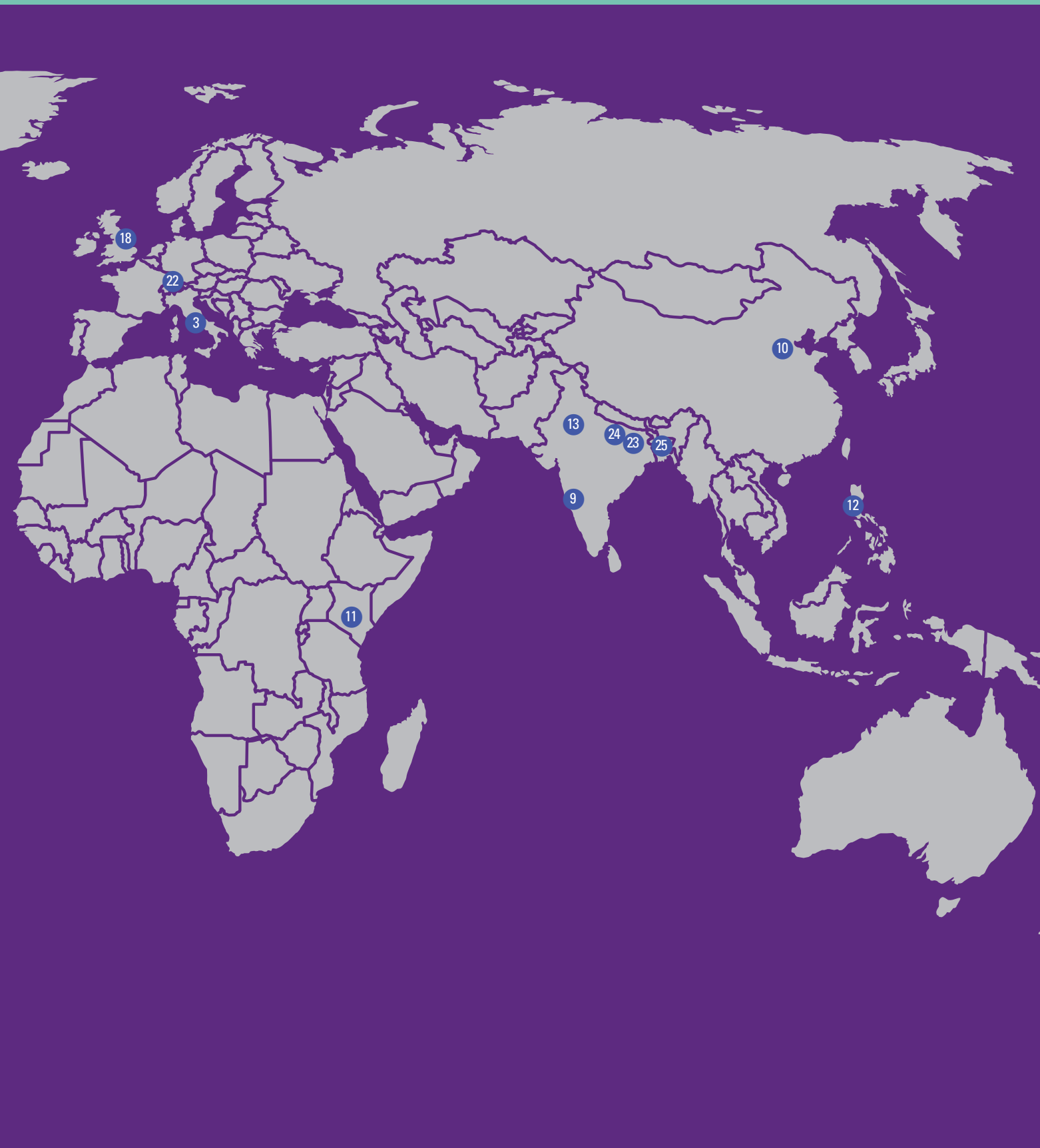
- 7 Compatible Technology International: Minneapolis, Minnesota
- 8 Postharvest Education Foundation: La Pine, Oregon
- 9 Mahyco Seed: Mumbai, India
- 10 State Administration of Grain: Beijing, China
- 11 Alliance for a Green Revolution in Africa (AGRA): Westlands (Nairobi) Kenya
- 12 International Rice Research Institute (IRRI): University of the Philippines at Los Banos, Philippines
- 13 Indian Council of Agricultural Research (ICAR): New Delhi, India
- 14 University of Vicosa: Vicosa, Brazil
- 15 University of Sao Paulo: Sao Paulo, Brazil
- 16 ADM: Decatur, Illinois
- 17 American Society of Agricultural and Biological Engineers (ASABE): St. Joseph, Michigan

- 18 University of Greenwich Natural Resources Institute: Greenwich, England
- 19 Purdue University: Lafayette, Indiana
- 20 Iowa State University: Ames, Iowa
- 21 University of California – Davis: Davis, California
- 22 Vestergaard – Lausanne, Switzerland
- 23 Bihar Agriculture University – Bhagalpur, India
- 24 Rajendra Agricultural University – Pusa Samastipur, India
- 25 Bangladesh Agricultural University – Mynsensingh, Bangladesh



ENGAGEMENT

Recognizing that reducing postharvest losses requires multi-stakeholder approaches, the ADM Institute works to engage actors across all sectors in collaborative efforts and partnerships. From partnering on a project to sharing thoughts and ideas, engagement is any positive relationship we can forge towards improving conditions for farmers.



First International Congress on Postharvest Loss

18

This first-of-its-kind high-level congress will convene cross-sector stakeholders to engage in meaningful, action-oriented dialogue on postharvest loss (PHL) prevention and will produce a Roadmap for Global Postharvest Loss Reduction. The ADM Institute proudly launches the 2015 Annual Report at this important event on October 4-7 in Rome, Italy.

Over the course of three days, about 250 members of the PHL “community of practice” from more than 40 countries will address the many aspects of postharvest loss, from issues and interventions to measurement and education. Participants include the world’s leading experts on postharvest loss and prevention in the technology/research, education and outreach, and policy fields.

The speaking roster includes many leaders in the field, including administrators from the UN Food and Agriculture Organization (FAO), the World Food Programme, Rockefeller Foundation, and the U.S. Department of Agriculture.

Presentations and conversations will center around four main categories of issues and challenges related to postharvest loss:

- Postharvest loss status and emerging issues
- Intervention strategies for PHL mitigation
- Measurement methods and metrics of PHL, and
- Education platform and decision support system

The purpose of this Congress, the first of its kind, is to raise awareness of the significance of postharvest losses (PHL) in the context of global hunger issues and provide a knowledge exchange platform for PHL intervention plans, practices and

policies. The Congress seeks to create a global coalition for addressing PHL, create partnerships, and develop action plans for mitigating PHL.

The entire group will come together on the morning of the last day, October 7, to create a roadmap for future work on postharvest loss prevention. All the ideas of the preceding two days will lead up to this culminating event. The roadmap will be made widely available after the conclusion of the congress.

The event will be hosted by the ADM Institute for the Prevention of Postharvest Loss at the University of Illinois – Urbana-Champaign at the Auditorium Antonianum in Rome, Italy. The Rockefeller Foundation is a co-sponsor, and other high-level sponsors include the Bill & Melinda Gates Foundation, John Deere Co., USAID Feed the Future program, and the University of Illinois College of Agricultural, Consumer and Environmental Sciences.

For more information about the Congress, including blog posts from participants and a look at the roadmap, visit our Congress website at phlcongress.illinois.edu and the ADMI website at postharvest.illinois.edu



**ADM Institute for the
Prevention of Postharvest Loss**
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN



**BILL & MELINDA
GATES foundation**



ACES College of Agricultural,
Consumer and
Environmental Sciences



The First International Congress on Postharvest Loss Prevention will feature a number of high-level speakers addressing this very important global issue. Speakers from the University of Illinois and around the world will address our Congress participants during the opening session.



Dr. Robert A. Easter, President Emeritus, University of Illinois - Urbana-Champaign, was appointed president-designate of the University of Illinois in March 2012, and became the university's 19th president on July 2, 2012. Before becoming president, Easter spent his entire, nearly 40-year career as a senior administrator and faculty member on the university's Urbana-Champaign campus.



Dr. Robert Hauser, Dean, College of Agricultural, Consumer, and Environmental Sciences, University of Illinois - Urbana-Champaign, received his Ph.D. in agricultural economics at Iowa State University in 1982. He has been at the University of Illinois since then. Hauser

has been Dean of the College since 2009 and in 2012 he was appointed the Associate Provost for University of Illinois Extension.



Mr. Pradeep Khanna, Associate Chancellor for Corporate and International Relations, University of Illinois - Urbana-Champaign, works closely with offices of the vice chancellors as well as academic and other units to accomplish the campus goals of the offices that he oversees.

He also provides leadership for campus strategic planning to enhance international engagement.



Dr. Judith Rodin, President of the Rockefeller Foundation, joined the Foundation in 2005. Since then, she has recalibrated its focus to meet the challenges of the 21st century. The Foundation supports and shapes innovations to expand opportunity worldwide and build greater

resilience by helping people, communities and institutions prepare for, withstand and emerge stronger from acute shocks and chronic stresses.



Dr. Ertharin Cousin, Executive Director of the World Food Programme, began her tenure as the twelfth Executive Director of the United Nations World Food Programme on 5 April 2012. Cousin brings more than 25 years of national and international non-profit, government, and

corporate leadership experience focusing on hunger, food, and resilience strategies.



Mr. Daniel Gustafson, Deputy Director General of the United Nations Food and Agriculture Organization, started his career at the Inter-American Institute for Cooperation on Agriculture (IICA). He was based in Brazil from 1977-1988, working on a range of projects supporting Brazil's agricultural programs, rising to the position of Acting Country Representative for IICA. He joined FAO in 1994.



Mr. Joe Taets, Senior Vice President, President of Agricultural Service, ADM Company, is responsible for the commercial activities and the operations of the company's agricultural origination, wheat milling, and global trading, as well as ADM's transportation network, which

spans more than 75 countries. He also oversees strategy and growth activity across ADM's business lines in Europe, Africa and India. He joined ADM in 1988.

These featured speakers will also address the Congress about postharvest loss and food waste issues:



Mr. C.D. Glin, Rockefeller Foundation Associate Director, Africa Region, is based in Nairobi, Kenya. Glin supports and leads the strategy development and execution of several initiatives to contribute to the Foundation's dual goals to advance inclusive economies and build resilience. His

grant-making and investment portfolio primarily focuses on agriculture and rural development and includes the Foundation's emerging initiative to increase economic opportunity, enhance food security and contribute to environmental sustainability.



Mr. Michael Scuse, U.S. Undersecretary for Farm and Foreign Agricultural Services, previously served as Deputy Under Secretary for the FFAS mission area from 2009 to 2011 with primary responsibility over our domestic programs (Farm Services Agency and Risk Management Agency). Before joining USDA, Scuse was Delaware Secretary of Agriculture from May 2001 until September 2008.

Steering Committee

20

The ADM Institute Steering Committee provides guidance and oversight of the institute. The committee is comprised of one member from the ADM Company and five members from the University of Illinois.

Dr. Jennifer Bernhard, Professor and Associate Dean for Research, College of Engineering

Mr. Dennis Fisher, Director of Compliance, Ag Services and Corn Processing, Archer Daniels Midland Company

Dr. Neal Merchen, Associate Dean, Research in the College of Agricultural, Consumer and Environmental Sciences; Director, Illinois Agricultural Experiment Station; Professor, Department of Animal Sciences

Dr. Udatta Palekar, Associate Professor of Business Administration and Director of the Supply Chain Management Program

Dr. Prasanta Kalita, Director, ADM Institute for the Prevention of Post-harvest Loss; Professor, Soil and Water Resources Engineering, Department of Agricultural and Biological Engineering

Dr. K.C. Ting, Professor and Head, Department of Agricultural and Biological Engineering

“It is clear that a significant portion of the increase in foodstuffs available for consumption by the people of the world will have to come through reduction in wastage of that which is already produced.

That's why we are here today. Our work is not trivial. Success is not guaranteed but in some sense, failure is not an option.”

Dr. Robert A. Easter

President Emeritus of the University of Illinois, speaking at the launch of the ADMI project in Bihar, India, on August 10, 2015

The External Advisory Board provides strategic guidance and assistance to the institute. The Board meets annually, and is comprised of members representing various academic, commercial, governmental and non-governmental institutions with strong interests and experience in postharvest loss issues.

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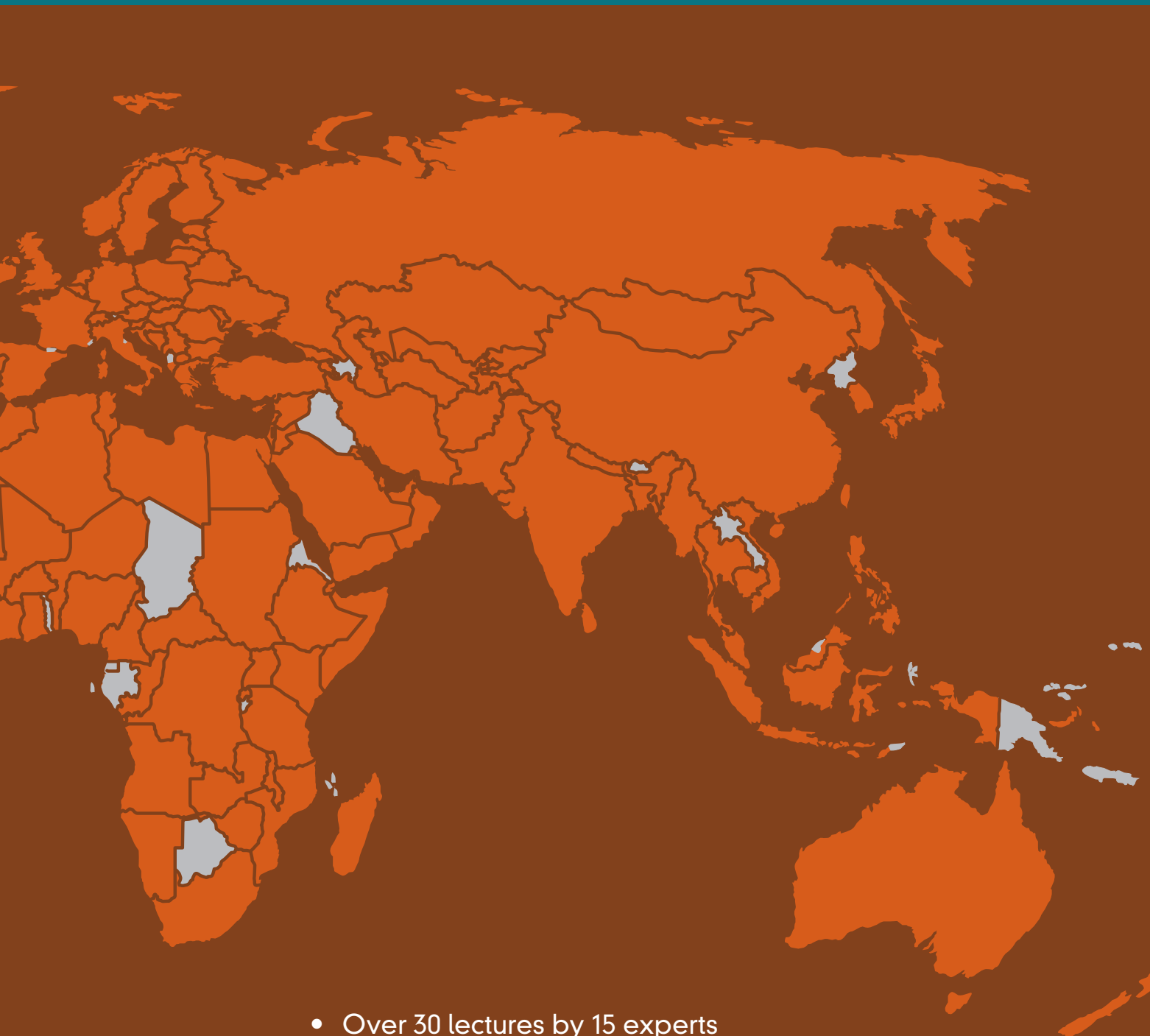
Coursera



Afghanistan	Finland	Morocco
Albania	France	Mozambique
Algeria	Gambia	Myanmar
Angola	Georgia	Namibia
Antigua and Barbuda	Germany	Nepal
Argentina	Ghana	Netherlands
Armenia	Greece	New Zealand
Australia	Grenada	Nicaragua
Austria	Guatemala	Niger
Azerbaijan	Guernsey	Nigeria
Bahamas	Guyana	Norway
Bangladesh	Haiti	Oman
Barbados	Honduras	Pakistan
Belarus	Hong Kong	Palestinian Territory
Belgium	Hungary	Panama
Belize	Iceland	Paraguay
Benin	India	Peru
Bolivia	Indonesia	Philippines
Bonaire	Iran, Islamic Republic of	Poland
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Canada	Jordan	Saint Eustatius and Saba
Central African Republic	Kazakhstan	Saint Lucia
Chile	Kenya	Saint Vincent and the Grenadines
China	Korea, Republic of	Samoa
Colombia	Kuwait	Saudi Arabia
Congo, The Democratic Republic of the	Kyrgyzstan	Senegal
Costa Rica	Latvia	Serbia
Cote d'Ivoire	Lebanon	Seychelles
Croatia	Lesotho	Sierra Leone
Curacao	Liberia	Singapore
Cyprus	Libyan Arab Jamahiriya	Slovakia
Czech Republic	Lithuania	Slovenia
Denmark	Luxembourg	Somalia
Djibouti	Macedonia	South Africa
Dominica	Madagascar	South Sudan
Dominican Republic	Malawi	Spain
Ecuador	Malaysia	Sri Lanka
Egypt	Maldives	Sudan
El Salvador	Mali	Suriname
Estonia	Malta	Swaziland
Ethiopia	Mauritania	Sweden
Fiji	Mauritius	Switzerland
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	Mongolia	
		Tajikistan
		Tanzania, United Republic of
		Thailand
		Trinidad and Tobago
		Tunisia
		Turkey
		Uganda
		Ukraine
		United Arab Emirates
		United Kingdom
		United States
		Uruguay
		Uzbekistan
		Venezuela
		Vietnam
		Virgin Islands, British
		Yemen
		Zambia
		Zimbabwe

EDUCATION

As an international information hub, the ADM Institute actively seeks to share knowledge, provide training, develop demonstrations, and educate our future generations on how to prevent losses and improve food supply chains. In 2015, the ADM Institute continued to support initiatives to observe, investigate, and explore PHL issues. The institute also expanded its educational offerings to the global scale, with the launching of its first massive online open course, "PHL 101".



- Over 30 lectures by 15 experts
- 2 online offerings in 2015
- 6,365 learners from 166 countries

Coursera Allows ADM Institute to Engage in Worldwide Dialogue

24

Do you know postharvest loss is a problem, but don't know where to go from there? Are you interested in learning more about specific issues in the broad framework of food security, rural development, and sustainability? Students of the first free massive online open course (MOOC) on postharvest loss prevention started out in the same way.

In 2015, the ADM Institute launched a new course via Coursera, "Global Postharvest Loss Prevention: Fundamentals, Technologies, and Actors". The course was offered in February and June, drawing a total of 6,365 learners from 166 countries.

Informally referred to as "PHL 101", the course targets four key knowledge areas: an overview of postharvest loss; supply chain activities including harvesting, drying, and storage; economics and markets; and an introduction to the network of actors working in the field of PHL prevention. Learners, or course participants, from all backgrounds and professions were exposed to the most fundamental topics and concepts to understand about postharvest loss.

The Coursera learning platform combines lecture videos by experts, key readings, videos, assessments, and community forums to create an interactive learning experience. Students benefit both from the wide variety of resources offered in the course, as well as from the participation of their peers around the world in discussions and assessments within the course community.

Students' responses have been overwhelmingly positive. From learning fundamental knowledge, sharing personal

experiences, and meeting new friends and colleagues, the e-learning environment provides students many opportunities to develop and enhance their skillsets and networks.

Coursera Coming Again Soon

Those who are interested can sign up to receive an email announcement about the next course offering at the same address. Under "sessions", change the date to "future sessions" and click "add to watchlist". For more information, contact the institute at postharvestinstitute@illinois.edu.

Information about the course, course materials, and course discussions from the previous offering can all be accessed by joining at coursera.org/course/postharvestloss.

Did you know?

Coursera is a leading provider of MOOCs, partnering with top universities and organizations worldwide to offer courses online for anyone to take. The University of Illinois at Urbana-Champaign partnered with Coursera in the summer of 2012, the first U.S. land-grant institution to join the consortium of more than a dozen global universities.

“ This was my first Coursera course and I can truly say it was very informative and enriching. I have really enjoyed the learning experience and stimulating discussions. Will get the word out...the PHL war must be won! ”

PHL 101 graduate
Nigeria

In January 2015, the ADM Institute sponsored 18 undergraduate students from the University of Illinois to study agricultural supply chains in India.

From rice paddies in the rural outskirts of Chennai to the wheat markets of the northern state of Haryana, students spent 10 days observing and analyzing how supply chains function in Indian contexts and what are issues faced by supply chain actors.

This year's trip was the fourth in a row, and included stops to the cities of Chennai, Delhi, Agra, and Panipat. To better understand postharvest loss issues, the group interviewed smallholder farmers, visited various local markets, and interacted with supply chain actors including producers, processors, and vendors of agricultural and other goods.

Beginning in and around Chennai, India's fifth largest city located in the southern state of Tamil Nadu, students observed stages of the rice supply chain. With support from the Marketplace Literacy Project led by Illinois professor Madhu Viswanathan, students conducted interviews with local farmers, facility managers, government officials, vendors, and non-governmental organization leaders. They found that even when losses are clearly visible, farmers don't identify them as an issue they can do anything about. In agricultural systems around the world, postharvest losses are viewed as given to occur because there are few ways to prevent them.

Students also saw that losses are not always physical. At Koyambedu Wholesale Market, the largest in Asia,

the students learned through talking with vendors that as the day goes on and prices are lowered to finish selling the day's product, they experience losses.

The group also visited farms and facilities in northern India, giving the students the chance to observe size, crop, and management differences between agricultural systems in the south and north. At Panipat, a city in the wheat-producing state, Haryana, students visited a grain mandi and learned about how grains are marketed and the role of commission agents in buying and selling crops. Agents face issues with maintaining grain quality in storage due to rats, rodents, and thieves, and must rely on their relationships to ensure the grain moves through the supply chain in good condition.

The students were exposed to an entirely different culture, economy, and environment during their trip. They visited the Delhi-based auto plant of a leading car company, Maruti-Suzuki, where company representatives, including the Vice President of Supply Chain, gave the students a tour of the plant and discussed the company's history and current business environment. They also visited various cultural sites, including the world famous Taj Mahal and Agra Fort. From playing cricket with locals to eating new, unfamiliar foods, students stepped out of their comfort zones to experience the rich culture of India and gain a new understanding of the world around them.



Since 2013, the John Deere Foundation has awarded funding to the ADM Institute to support experiential learning for undergraduate students at the University of Illinois at Urbana-Champaign.

This year's trip was coordinated by the College of Business Supply Chain Management and ACES.

International Training Programs

26

In December 2014, the ADM Institute hosted Chinese government officials for an on-site training program on food loss and waste reduction.

Through faculty expert lectures and site visits to local farms and facilities, the 10-day program presented an overview of the global food security crisis, available postharvest technologies for loss reduction along the food supply chain, current practices, policies, and education on food loss and food waste reduction in the United States, and the ADM Institute's efforts on reducing postharvest loss.

The training program aimed to help participants understand this global issue and share U.S. experiences in advancing food security.

Attendees included government representatives from the State Administration of Grain (SAG) in China and its associated entities, including the Academy of State Administration of Grain (ASAG) and SAG's provincial offices and representatives from two grain and oil companies. Most of the trainees were engineers or managers.

Since 2013, the Chinese government has brought attention to food loss and food waste issues along the supply chain and their significance in advancing food security. Grain production in China has been growing in the past decade. However, more than 50 million metric tons of food is lost or wasted each year. With the reduction of food loss, people in China would have more food, and use of scarce resources, such as land and water, could be more efficient. In March 2014, the Chinese government further issued a high-level memo against food loss and food waste, urging government agencies to reduce food loss and food waste along the supply chain, recycle and reuse food residues, educate people on food loss and food waste reduction, and establish policies on food loss and food waste. Learning from other countries' experiences and practices is essential for government to establish the strategies for food loss and food waste reduction.

SAG Training Topics

- Global food security crisis;
- Measuring postharvest loss;
- Effects of postharvest practices and grain quality on dry grind and ethanol production;
- Effects of postharvest practices and grain quality on corn milling;
- U.S. supply chain efficiency;
- U.S. public-private partnership for PHL prevention; and,
- Education and extension on food security challenges in the U.S.

Get Connected

with ADM Institute,
the information hub
for postharvest loss
prevention!

PHL Congress site:

<http://phlcongress.illinois.edu/>

ADM Institute for the Prevention of Postharvest Loss:

<http://postharvestinstitute.illinois.edu/>



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Institute blog:

<http://publish.illinois.edu/phlinstitute/>

Send us an email:

postharvestinstitute@illinois.edu

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The staff members of the ADM Institute for the Prevention of Postharvest Loss work on the campus of the University of Illinois at Urbana-Champaign and around the world to support stakeholders as they work to prevent postharvest losses and improve lives.



Dr. Prasanta Kalita is the director of the ADM Institute for the Prevention of Postharvest Loss and a professor and leader of the Soil & Water Resources Engineering Division in Agricultural & Biological Engineering Department at the University of Illinois. He currently also serves as the

Assistant Dean of Research in the College of Agricultural, Consumer and Environmental Sciences (ACES) and a Distinguished Teacher-Scholar at the University of Illinois.



Dr. Deepak Kumar is a postdoctoral research associate at the ADM Institute. He joined the institute in December 2014, after completing his Ph.D. in biological and ecological engineering at Oregon State University, Corvallis. Deepak works with colleagues at the University of Illinois

to develop and advance the institute's research projects in developing countries, especially India and Bangladesh.



Sarah Bingaman Schwartz joined the ADM Institute as communications coordinator in April 2015. She manages the institute's publications, including the Annual Report and Periodic Report, in addition to other electronic and printed publications. Sarah grew up on a farm in southwest Iowa, and graduated from the University of Northern Iowa. Her background is in journalism and public relations.

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Kari Wozniak is the program coordinator at the ADM Institute and has been with the institute since September 2012. She manages institute projects and initiatives, is a liaison to external partners, and leads student engagement efforts. Kari received her undergraduate degree from Illinois.



Julie Thomas joined the ADM Institute staff as office manager in July 2015. Before joining the ADM Institute, she worked in the Chemistry and Veterinary Medicine departments at the University of Illinois.



John Graham is a student intern at the ADM Institute. He is a senior majoring in Agricultural and Consumer Economics. At the institute, he manages the social media accounts and the PHL in the News publication.



Alex Lake is the newest member of the ADM Institute, starting in September 2015 after completing his undergraduate degree from the University of Illinois. He works as a project coordinator focusing on the ADMI Village in Bihar. Alex provides leadership in selection, acquisition, and installment of postharvest loss prevention technologies.



**ADM Institute for the
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