



# INTSORMIL

Sorghum, Millet and Other Grains CRSP

# Inside the Grain

Growing solutions to global hunger



Conference attendees pose for a photo after touring an opaque beer brewery in Lusaka, Zambia.

## Zambia Workshop a Success

Believed to be the first of its kind, an INTSORMIL conference brought researchers and end-users together to discuss the future of the sorghum industry in Southern Africa.

In December, INTSORMIL scientists met with sorghum breeders, farmers and beer brewers in Lusaka, Zambia for a conference on sorghum food enterprise and technology development.

On the first day, Zambia's Permanent Secretary of the Ministry of Science Technology and Vocational Training, Chriticles Mwansa, arrived to open the conference. He spoke to attendees about the importance of sorghum to Zambia and Africa.

"It is interesting and good to see that products like sorghum could be found on the way to commercialization and making this product a viable crop not only in Zambia but in Africa. I think we need to appreciate the influence we are making," he said.

His presence attracted several Zambia television stations and newspapers. At one point, an entire back row of the conference room was filled with reporters quickly jotting notes.

The conference was divided into three full

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John Taylor examines sorghum germinability.

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## Letters from Management

By Dr. John Yohe

This past year has been extremely productive for INTSORMIL. We have completed the fourth year of our current five year Leader Cooperative Agreement with Associates Award and the third year of a five-year Associate Award from the USAID/Mali Mission. In October, 2010 INTSORMIL received an Associate Cooperative Agreement Award from USAID in Washington, D.C. to provide support for the implementation of the Strategic Investment in Rapid Technology Dissemination (SIRTD): Identification and Release of Brown Midrib (bmr) Sorghum Varieties to Producers in Central America and Haiti. INTSORMIL currently has active collaborative research programs in 13 countries in Africa and six countries in Central

America and Haiti. In May 2010, the U.S. Department of State officially launched the U.S Government's global hunger and food security initiative, called Feed the Future (FTF). The Department of State is the lead agency initially for developing the Feed the Future strategy, while the U.S. Agency for International Development (USAID) is the primary agency responsible for coordinating its implementation. The two primary objectives of Feed the Future are (1) to accelerate inclusive agricultural sector growth, and (2) to improve the nutritional status in developing countries, particularly of women and children. Currently, Feed the Future is focusing activities in 20 developing countries in sub-Saharan Africa, Asia and Latin America and the Caribbean. Investments will take place in two phases, depending on the extent that country investment plans (CIPs) have been developed in a given host country. The INTSORMIL Program works in 13 of the FTF countries. Over the next few months INTSORMIL will be developing a strategy for engaging in the FTF work and planning and developing a proposal for the next five years (2011-2016).

We welcome three new Journalism interns, Ms. Jamie Klein, Ms. Darcie Samuelson, and Mr. Tony Michaelsen who will be working with us on producing our Newsletter and other informational materials about INTSORMIL. Tony will be working with Dr. Short Heinrichs on developing video materials for our Associate Awards in Central America and Mali.

## Inside the Grain

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# INTSORMIL awarded \$1.1 million from USAID

Poverty is a real issue in Central America. In 2000, 64 percent of the population lived in poverty and 39 percent lived in extreme poverty. Studies show that about 65 percent of the population lives on farms. Through the Feed the Future Initiative, the United States Agency for International Development (USAID) is contributing to easing the poverty problem in Central America by working with the University of Nebraska-Lincoln-based Sorghum Millet and Other Grains program (INTSORMIL).

Dr. John Yohe, INTSORMIL program director, reports that USAID recently granted a \$1.1 million associate award to INTSORMIL in

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Dr. Rene Clara, INTSORMIL Central America Regional Coordinator, CENTA, El Salvador with a high grain quality bmr sorghum variety.

## Meet the Interns!

For the first time in its history, INTSORMIL has hired three interns to help promote and advertise its research efforts. The interns are all students at the University of Nebraska-Lincoln, enjoy traveling and the occasional coloring session.



### Darcie Samuelson

Samuelson is a senior agricultural journalism major at UNL. She joined INTSORMIL in January and is designing promotional materials and creating Impact reports.

### Tony Michaelsen

Michaelsen is an advertising graduate student at UNL. He joined INTSORMIL in January and is planning promotional videos for INTSORMIL.



### Jamie Klein

Klein is a senior news-editorial major at UNL. She started writing for INTSORMIL in January 2010 when INTSORMIL paired with a science writing class. She now compiles articles for the newsletter and writes press releases.

Zambia Workshop continued from pg. 1

days and one half day focused on entrepreneurial skills, the importance of reliable sorghum food-grain supplies and sorghum food and beverage processing, including milling and malting. According to the workshop invitation, the goal of the meeting was to “increase sorghum grain utilization in southern Africa, to benefit small-holder farmers, to help create and grow food processing enterprises and in so doing improve regional food security.”

More than 20 PowerPoint presentations from the workshop can be found at the INT-SORMIL website. Among the presenters were:

- Lloyd Rooney, of Texas A&M University, gave a presentation on grain supply and the importance of having a reliable supply of food grain sorghum. “You (need to) have a good quality grain support if you’re going to be in that market and expect people to pay their hard earned cash for your product,” he said.

- Janet and John Taylor of South Africa’s Pretoria University gave a presentation and demonstration about easy, practical ways to test sorghum for things like hardness, germinability and tannins. Their tests involved simple items like newspapers, foil, plastic containers and bleach.

Janet Taylor said it was important for processors to test sorghum they buy from farmers to ensure its quality.

Lanre Ogunbanjo, CEO of LifeCare Ventures in Nigeria, attended the conference in hopes of learning more about sorghum varieties and how they can be used in the malting process. LifeCare Ventures is a food ingredient manufacturer whose main commodity is sorghum malts.

Another conference attendee, Baron Jere, operation manager of Lusaka National Breweries, said he attended to make contacts with other people interested in sorghum.

“Hopefully in the future we’ll get that product locally. It’s interesting to see what’s going on in other countries. I learned a bit,” he said.

Gary Peterson is INTSORMIL’s regional coordinator for Southern Africa and worked with Janet and John Taylor and Luke Mugode of the National Institute for Scientific and Industrial Research in Zambia to create the workshop. They began planning in 2009, which involved coordinating hotels, transportation, conference presenters and attendees.

“It’s not very easy to bring people together. It requires a lot of work and a lot of focus. Without focus it’s very easy to give up,” Mugode said. The conference boasted about 40 attendees and presenters, including scientists and farmers from Zambia, Tanzania, Nigeria, Ethiopia and the U.S. After three days of presentations, a brewery tour and intense question-and-answer sessions, Mugode said he felt everyone’s hard work paid off. “The turnout was excellent,” he said. “This workshop has been a success.”



Employees of Lusaka National Breweries package Chibuku beer.



Curt Weller and other conference attendees participate in a breakaway session.

# Directory of Experts

On the INTSORMIL homepage is a link titled “Africa Food Science Directory.” The link became live on [intsormil.org](http://intsormil.org) in July 2010 and was created to provide easy access to experts in sorghum and millet food sciences throughout 15 countries in Africa.

“Its function is to give interested people an idea of who in Africa have specific skills, which they may be looking for. This may be to obtain help or advice or even collaboration in research,” Janet Taylor of Pretoria University said. Taylor compiled the directory in 2008 and recently updated it for the website. The PDF file includes basic contact information and a list of skills for 35 scientists organized by country.



## INTSORMIL Award continued from pg. 3

October 2010 for a three year program in six Central American countries—Guatemala, Honduras, Nicaragua, El Salvador, Panama and Costa Rica—and Haiti in the Caribbean. The project, “Identification and Release of Brown Midrib (bmr) Sorghum Varieties to Producers in Central America and Haiti,” aims to help farmers grow more productive forage sorghum crops. Forage sorghum is the green leafy material and stalk on sorghum (not the grain) that farmers can use for feeding dairy and beef cattle. If the forage is more productive, then dairy and beef cattle produce greater amounts of meat and milk.

Because sorghum is the second major cereal grown in Central America, higher yields and increased nutritional value of sorghum forage and grain also means financial stability for farmers. The cattle, poultry and swine industry of the region rely heavily on grain and forage sorghum and when reliable, high-grade sorghum isn’t available for farmers to feed their cattle, poultry and swine, the result can be economic loss.

In the first year of the program, INTSORMIL scientists will focus on evaluating and testing advanced bmr sorghum lines that have already been developed by INTSORMIL in collaboration with the El Salvador national sorghum program, Centro Nacional de Tecnología Agropecuaria y Forestal (CENTA). The brown midrib trait, characterized by the presence of a distinctly brown midrib in the leaf, also produces plants with lower lignin content. The reduced lignin content increases the digestibility of the forage. When sorghum is more digestible for livestock it means better meat and milk production. The two best varieties selected in each country during the first year will be put into on-farm demonstrations and seed production plots in the second year of the program. By the third year, each country program will provide seed of the two best varieties to small scale farmers through a technology transfer process. Since these are open-pollinated varieties, farmers can save their own seed for the next season’s crop. Farmers will be trained in seed production to quickly build up a seed supply which can mean a faster spread of those sorghum varieties to small scale producers throughout the seven countries. INTSORMIL expects there will be a significant impact on the production of grain and forage for livestock in Central America and Haiti. Enhanced forage quality will lead to greater use and value of sorghum as a crop in the regions for increased milk and beef production.

# Malian Thick Porridges and Satiety

A study was recently conducted through INTSORMIL to examine thick sorghum and millet porridges consumption related to preference and satiation in the Sikasso, Segou and Mopti regions of Mali. This is part of a larger study to understand the effect of thick porridges, and delayed glucose delivery to the body, on satiety and overall food consumption.

The conclusions from data collected are that thick porridges are generally eaten more frequently in the villages (Figure 1) and are consumed in a thicker consistency. Thick porridges are also very satiating, as thicker porridges correlated with lower hunger scores at two and four hours post-consumption (Figure 2). The study was designed so that participants consumed as much as they wanted until they felt “full.” Participants were asked at two and four hours after consumption to judge their feeling of hunger. Satiety study participants had large differences in how hungry they felt two and four hours after consuming porridges of different thicknesses. “We wonder if this could be used in a promotional campaign to encourage urban populations to consume more sorghum/millet – something on the order of “eat sorghum and millet – they are healthy satiating foods (not ‘poor’ foods). Particularly in this time of high prices for grain imports, I think this could be helpful,” said Bruce Hamaker, an INTSORMIL scientist at Purdue University, in a document sent to INTSORMIL’s management office.

**Figure 1. Survey of Frequency of Porridge Consumption**

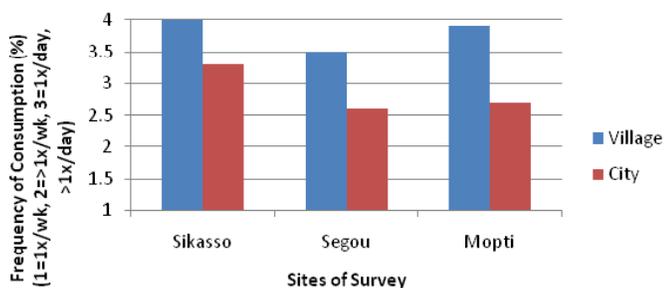
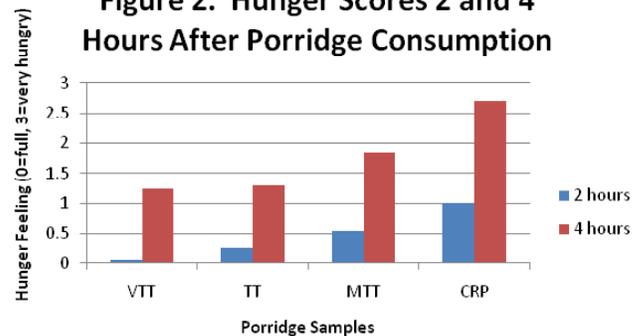


Figure 1 – Shows that thick porridges from sorghum/millet are consumed at higher frequency in villages than cities (Bamako likely is even lower in frequency).

**Figure 2. Hunger Scores 2 and 4 Hours After Porridge Consumption**



Participants still felt full two hours after eating very thick (VTT) and thick (TT) porridges, and after four hours felt slightly hungry. Four hours after eating the control rice porridge (CRP), participants felt very hungry. 0=full, 1=slightly hungry, 2=hungry, 3=very hungry, MTT=medium thick.

## INTSORMIL scientist chosen for Jefferson Science Fellowship

INTSORMIL PI Curt Weller recently accepted a Jefferson Science Fellowship. Weller, a professor in the department of Biological Systems Engineering at the University of Nebraska-Lincoln, will join other fellows to spend one year with the State Department or USAID in Washington, D.C. and may also travel to embassies. Fellows provide science, technology and engineering expertise that will impact U.S. Department of State and USAID policy decisions and are expected to learn about agency operations. Weller said he is excited and happy about accepting the fellowship and feels it reflects on himself, UNL and his other collegial relationships.



“I assume my participation will be beneficial to my endeavors including future work with sorghum which in turn would be beneficial to Nebraska,” he said.

The U.S. Department of State established the fellowship in 2003 as recognition of the importance of science, technology and engineering “to the formulation and implementation of U.S. government policy.” According to the fellowship’s website, “The articulation of ‘accurate science for statecraft’ to policy makers has become an essential element in establishing effective international relationships in the 21st century.”