

# FARMING TO FIGHT FAMINE

Heartland Farms and Walther Farms work with U.S. universities to improve potato production in Ethiopia

By Charlie Higgins, Ph.D., Director of Research & Development, Heartland Farms and Walther Farms

Potato yields in Ethiopia were less than 50 cwt/acre in 1969 when my wife, Judy, and I were teachers there with the Peace Corps.

The population in Ethiopia has grown from 20 million to 80 million over the last 40 years, but potato yields per acre are the same. Small farmers with just three or four acres in the high mountains only have potatoes to feed their children after the grain is used up before the next harvest.

The Ethiopian farmers use in-ground storage (leaving potatoes where they grew) which typically causes half the crop to be lost to insect damage. About forty percent of the children do not receive enough calories for healthy living. Potatoes produce more food per



A young Ethiopian boy eats a potato. About forty percent of the children in Ethiopia do not receive enough calories for healthy living. Increased potato production is helping to alleviate the famine problem.

square yard than any other crop that they can grow in the high mountains. Increased potato production could alleviate some of the famine problem in Ethiopia as it has been done in China and India. The green revolution has come to Ethiopia for grain crops but not for potatoes.

Last November, I watched an Ethiopian farmer harvest a new high yielding potato variety with a team of oxen. I have seen improvement, little by little, over the last four years thanks to a lot of hard working and very generous people. New varieties were selected from CIP (the International Potato Center in Lima, Peru) true seed and are capable of yielding 300 cwt/acre compared to less than 50 cwt/acre from the local varieties. However, no clean seed of the

new varieties was available.

That's when the University of Wisconsin, Heartland Farms (WI), Walther Farms (MI), Michigan State University and North Dakota State University all jumped at the opportunity to help a starving country.

Four years ago I saw an empty potato tissue lab built with USAID funds, your tax dollars, in Ethiopia while I was on a USAID Farmer to Farmer visit. Construction was not complete and they did not have any clean clones to start. We were able to obtain disease-free clones for the Ethiopian lab from UW, MSU and NDSU. Now, Ermias Abate, the tissue culture lab manager, has the lab producing clones, and the screen house is full of clean seed production.



Ermias Abate, the tissue culture lab manager in Ethiopia, is shown growing a screen house full of disease-free potatoes



This high-yielding, improved variety grown in Ethiopia was selected from CIP seedlings.

Abate was further able to receive training in the U.S. with Dr. Amy Charkowski at the University of Wisconsin. Dr. Charkowski made a trip to Ethiopia in March of 2010 to provide advanced training to Abate. The University of Wisconsin and Michigan State University provided him with germplasm of late blight tolerant and PVY resistant clones that can be tested and crossed with Ethiopian high yield varieties. Dr. Gary Secor and others in the potato disease and tissue culture labs at North Dakota State University taught Abate how to clean diseases from field tubers to produce clean clones. Drs. Charkowski, Russell Groves, Felix Navarro, Jiwan Palta and many others at the University of Wisconsin provided critical training in lab management and screen house production. The Ethiopi-

an potato research team now has email support from the best minds in the U.S.

The next step will require the development of a micro-loan program so farmers in Ethiopia can contract for clean seed potatoes, fertilizer and crop protection products. The micro-loans would be repaid with cash, dehydrated potatoes or potatoes for the local school breakfast program.

One farmer stated that about half his crop is lost each year during ground storage. To reduce this loss, on-farm potato storages are being designed and built with assistance from this project. These storages can be built by the farmers with locally available materials.

Ethiopia has a wealth of sunshine.

There are nine or ten months of sun and then it rains about 40 to 50 inches in two or three months during the rainy season. Many farmers are replacing thatch roofs with tin. A tin roof with some black cloth and clear plastic can become an excellent potato and vegetable dryer. Steve Schewe, an engineer and former Peace Corps volunteer, helped design these dehydrators.

We are supporting the on-farm development of these solar dehydrators, and are giving support to an Ethiopian nutritionist to develop recipes with dehydrated potatoes that can be made into nutritious soups by adding boiling water. The dehydrated potatoes can be made from damaged potatoes by peeling, cutting off the part damaged by tuber moth, then dicing and dehydrat-



An Ethiopian farmer uses a team of oxen to harvest potatoes.

ing. These dehydrated potatoes can be stored for years if needed. If the rainy season does not come, the dehydrated potatoes could add to the food security for these small farm families.

In remote mountain villages, children of migrant workers are left with relatives several months of the year so the parents can find work. The director of one school stated that some of her students of these migrant families only had one meal per day and only attended school two to three days per week. Jason Walther and Nancy Poynter of Walther Farms conceived a school breakfast program to help these children more directly. With the aid of Fred Bechard, a retired Superintendent of Schools in Maine, and other returned volunteers of the XII group (1969 to 1971), a pilot

breakfast program will soon be implemented in a small school in the mountains.

In the U.S., test scores have been shown to increase greatly if children have breakfast available at school. The local farmers have volunteered to support the school breakfast program with donated potatoes to pay back micro-loans for clean seed potatoes of improved varieties.

A special thank you goes out to Dick Pavelski of Heartland Farms who advised in setting up the tax deductible Ethiopian Sustainable Food Project at the Community Foundation of Central Wisconsin ([www.cfcwi.org](http://www.cfcwi.org)). This fund has been used to support all the various aspects of this very effective and

worthwhile project. **CT**