University of Nebraska-Lincoln graduate student research is shedding light on management of two major crop pests –western bean cutworms and stink bugs.

Silvana Paula-Moraes, a doctoral student from Brazil, is studying western bean cutworm and survival of the pest on corn. Wan Zaki, a doctoral student from Malaysia, is studying stink bugs in corn and soybeans.

Paula-Moraes hopes her research will find out more about the pest of corn, because there is a lack of Nebraska-specific published information about it. Western bean cutworms injure corn plants by feeding on grain in the corn ear.

She hopes to characterize injury and damage information and establish an economic injury threshold for western bean cutworm and a management program for the pest.

She also hopes to propose a sampling plan for Nebraska farmers to determine the density of the western bean cutworm egg masses and make a decision on whether to treat for them.

She said while many farmers use Bt corn, some proteins of Bt hybrids have an effect on the western bean cutworms, but others don't. In addition, sweet corn and field corn refuge areas still are affected by western bean cutworms.

While the pest doesn't exist in Brazil, Paula-Moraes said her research is helping Nebraska farmers better manage western bean cutworms in their fields, while she gets experience in entomology field work, improves her English and forms networks and collaborations in the U.S.

"Having international graduate students come to Nebraska with their own government funding has allowed us to address important Nebraska issues more quickly," said Bob Wright, UNL entomologist. "In many cases, students hear about UNL from their advisers or other colleagues who have gone to school at Nebraska or have previous contacts with UNL faculty."

Paula-Moraes is in the U.S. on scholarship from her company in Brazil, the Brazilian Ag Research Corporation.

Paula-Moraes said Nebraska and her company has a long tradition of collaborating on research.

"I am excited that I am helping Nebraska farmers with this pest," she said. "This is a contribution to improve ag not only in Nebraska, but other countries by developing relationships that help both of us. It is important to learn and exchange ideas. Scientists in different parts of the world can work together."

Paula-Moraes will complete her Ph.D. next year. This work was also done in collaboration with the University of Minnesota.

Zaki's stink bug research is studying species composition and seasonal occurrence. He has found six stink bug species in Nebraska crops with the brown stink bug being the most abundant. The red shoulder stink bug is the second most prevalent.

Adult and nymph stink bugs damage corn and soybeans by penetrating plant tissue and sucking out plant fluids. Stink bug is a major pest on the east coast.

Zaki is on scholarship from Ministry of Higher Education Malaysia and Universiti Sians Malaysia under academic staff training scheme.

Zaki initially came to the U.S. to study soybean aphids, but decided to change his research area to stink bugs because, like western bean cutworms, there is no published information relevant to Nebraska. Stink bugs have become more common in Nebraska corn and soybeans over the last few years. Most published research on stink bugs is from the southeastern U.S. or for other crops, such as cotton, and may not relate to Nebraska.

Zaki said in Malaysia, stink bugs are more of a problem in rice and vegetables. However, he is learning techniques that he'll be able to take home and apply.

"Over a third of UNL entomology students come from outside the U.S.," Wright said. "Having a diversity of students helps our U.S. students to better understand the world and be prepared to work in a global environment when they graduate."

Zaki is studying stink bugs' survival in extreme hot or cold temperatures. He also is working to develop a sampling method for stink bugs.

By the time his research is finished, he plans to develop an integrated pest management plan for soybeans and corn.

He said stink bugs often affect only soybean field edges. So insecticides may need to be sprayed only on field edges, not the entire field, saving farmers time and money.

He also is studying potential of biological control agents on egg masses and seed treatment insecticides.

Zaki and Paula-Moraes are conducting their research under UNL Entomologists Wright, Tom Hunt, Shripat Kamble and Gary Hein at the Haskell Agricultural Laboratory near Concord, the South Central Agricultural Laboratory near Clay Center and the Panhandle Research and Extension Center at Scottsbluff.