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## Kirmser Undergraduate Research Award: Libraries' scholarship rewards superior undergraduate research

Kansas State University Libraries

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# UNWRAPPING Potential

## K-STATE LIBRARIES SUPPORT REMARKABLE UNDERGRADUATE RESEARCH

BY: SARAH HOYT

K-State Libraries' services, materials and faculty help students in their academic pursuits year-round.

The Libraries are also proud to recognize outstanding original research once it's completed. In 2013, the Libraries established the Kirmser Undergraduate Research Award thanks to the generous support from the Philip and Jeune Kirmser estate. Eleven projects on topics as varied as U.S. presidential assassinations, the criminal justice system and stereotypes in children's nonfiction have been honored since then.

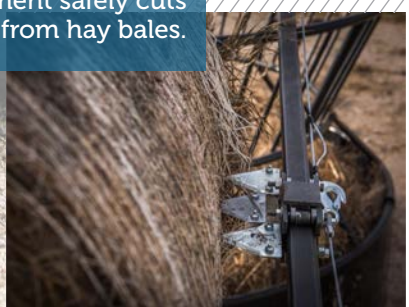
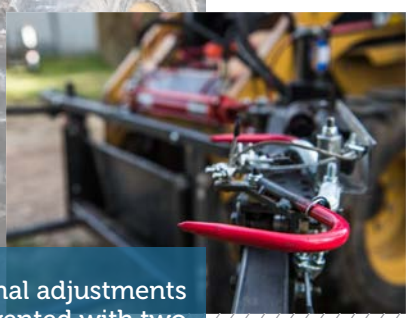

Sometimes, though, research projects come from more unexpected sources. Like a hay bale.

Every year instructor Edwin Brokesh asks his biological systems engineering seniors to identify a challenge in their field. Then they work together as a team on a design solution to overcome that obstacle.

When three K-State students with deep roots in agriculture tackled the assignment last year, they thought about the work that goes into feeding cattle.

Most farmers feed their cattle large, round hay bales that weigh 1,500 pounds or more. They move the bales, which are often wrapped in plastic net wrap, with a tractor or skid-steer loader. The wrap is a necessary evil: It protects the bale during transport and prevents spoilage, but it could be fatal to cattle if ingested. That means the farmer must exit the tractor and manually remove and dispose of the wrap, all while maneuvering around a hay bale that could crush a person if it slipped the wrong way.

And so the three Kansans—David Leiszler (Clifton), Peter Masters (Troy) and Austin Schmitz (Axtell)—hit upon their senior research project. They set out to create an attachment for a skid-steer loader that could lift a bale and safely remove the net wrap while the farmer remains in the vehicle.



Austin Schmitz makes final adjustments to a machine he invented with two classmates. Their implement safely cuts and removes net wrap from hay bales.



Before Brokesh would approve the project, he asked the team to find a customer, which led them to Kerri Ebert, project coordinator at Kansas AgrAbility. Kansas AgrAbility, based out of K-State's biological and

they refined their design and error-proofed it before starting the building stage.

The team completed all of that just in time to apply for the 2016

services that the Libraries provide that I had taken for granted, and the accessibility of information made it possible for us to research and design our project."

**"THE KIRMSEER AWARD REALLY SHOWS HOW OUR UNIVERSITY LIBRARY SUPPORTS STUDENTS. RECOGNIZING THE RESEARCH, WORK AND EFFORT PUT INTO STUDENT PROJECTS IS CRUCIAL. THROUGHOUT THE APPLICATION PROCESS I GAINED A DEEPER APPRECIATION FOR SERVICES THAT THE LIBRARIES PROVIDE THAT I HAD TAKEN FOR GRANTED, AND THE ACCESSIBILITY OF INFORMATION MADE IT POSSIBLE FOR US TO RESEARCH AND DESIGN OUR PROJECT."**

— AUSTIN SCHMITZ



agricultural engineering department, works to enable a high-quality lifestyle for farmers, ranchers and other agricultural workers with disabilities. Ebert put the team in contact with Neal Gugler, a livestock farmer.

Six generations of Gugler's family have farmed on their land southeast of Chapman, Kansas. The students visited Gugler to hear about his feeding routine, which is complicated by mobility impairment, and he showed them the multi-step process he uses to get bales to his cattle. Next, the team researched existing implements, safety standards and more, a process that Brokesh teaches as part of the design class with support from K-State Libraries.

Engineering librarian Alice Trussell visited the classroom to teach students how to conduct a literature review and leverage the Libraries' subscriptions and databases that would fuel their research.

Once Leiszler, Masters and Schmitz had the background knowledge they needed, they created design ideas and tested those concepts to determine feasibility. Finally,



Kirmser Undergraduate Research Award. They won the group category and received \$3,000.

The entire experience gave the students a better understanding of K-State Libraries' value.

"The Kirmser Award really shows how our university library supports students," Schmitz said. "Recognizing the research, work and effort put into student projects is crucial. Throughout the application process I gained a deeper appreciation for



"Their device has the potential to help a lot of people," said Gugler. Gugler's farm is located outside Chapman, Kansas.



This group was the second Kirmser-winning team from Brokesh's class; another group took the honor in 2015. Brokesh says his students' accomplishments directly relate to their willingness to engage with a very intense research process.

"The two winning teams consisted of very motivated students

tackling problems that were just outside of their normal areas of knowledge," Brokesh said. "To even have a chance to be successful, they had to do significant amounts of research."

Jason Coleman, head of library user services and chair of the Kirmser Award selection committee, noted the professionalism of this year's group award winners.

"This group's writing, research and ingenuity deserve recognition beyond the walls of the classroom, and the generosity of the Kirmser family has

made that possible," Coleman said.

Leiszler and Masters graduated in May 2016, while Schmitz stayed to complete a graduate degree. He also continued to fine-tune the implement, and he was able to deliver a prototype to Gugler last fall.

"The average age of a Kansas farmer is near 60 and it continues to rise, so more are facing mobility issues. And frankly, it's a tool that could make life easier for any farmer," said Gugler.

After winning the Kirmser Award, Schmitz represented the team at the AGCO National Student Design Competition finals in Orlando, Florida, in July 2016, where he led them to a third place finish.

He hopes to patent their device and pursue commercial production in the future.



From left, Austin Schmitz, Peter Masters and David Leiszler. The three engineering students won the 2016 Kirmser Undergraduate Research Award group category.

[www.lib.k-state.edu/kirmser-undergraduate-research-award](http://www.lib.k-state.edu/kirmser-undergraduate-research-award)

