

New technology is making aerial crop research easier, faster and more affordable for University of Nebraska-Lincoln researchers.

Aerial crop scouting—which was once costly and inefficient—is now fast, easy and accessible thanks to a robotic helicopter, about the size of a large pizza.

A robot helicopter offers a lot more stability and takes static pictures that produce better images more helpful to researchers.

“Using this kind of technology saves us time in our research,” said Keenan Amundsen, UNL assistant professor of turfgrass and genetics. “We are really excited about this technology. We have been trying to do this type of stuff for at least three years but hadn’t been successful.”

The aerial images allow Amundsen, who studies turfgrass, to predict areas prone to turf stress. This in turn allows for site-specific management to that area only before it becomes a bigger problem, he said.

“I had been doing similar research for years using radio controlled airplanes and blimps; however, when doing aerial turfgrass research using an airplane, it moves too fast,” said Scott Dworak, a UNL doctoral horticulture and turfgrass science major, who is studying effects of irrigation on turf.

Through his research, he applies water to his plots, at the Agricultural Research and Development Center near Mead and the Panhandle Research and Extension Center at Scottsbluff, from more to less to none. This allows him to study drought stress in turf.

“The digital imaging with aerial robots help us to predict and evaluate how turf performs under various amounts of irrigation,” he said. “The aerial robotics can capture all images in one nice shot.”

Amundsen said the turfgrass industry has done this type of work by mounting cameras to golf carts and then piecing together images, but nothing compares to the images the robotic helicopter produces.

Dworak said this saves him time and money, is more convenient and produces higher quality images than other means.

Vishal Singh, a multimedia design specialist for UNL’s EdMedia, developed the robotic helicopter through his company Pixobot (pixobot.com). He also can make smaller or larger robots as necessary depending on the project. It was by chance Singh and Amundsen met at an Institute of Agriculture and Natural Resources seminar.

There, they began talking about how Singh’s robot could help Amundsen with his research.

This robotic helicopter and this technology will be useful for golf courses and other turf areas that need site-specific management, Amundsen said.

“This will be particularly useful for golf courses as irrigation, fertilizer and managing pests are a big chunk of their budget,” he said.

This also will allow golf courses to use less water and fewer chemicals which is better for the environment.