

Idaho Innovators

Artificial intelligence IDs insects

By BRAD CARLSON
Capital Press

Artificial intelligence promises to make identifying insects faster and easier, the University of Idaho's Marek Borowiec and his research teammates believe.

USDA's National Institute of Food and Agriculture agreed. In April, the institute awarded Borowiec's team a Cyberinformatics Tools grant for \$499,500.

The project, aimed at harnessing artificial intelligence to identify insects, will aid integrated pest management in small-grain production.

"The motivation here is essentially to make the process a little bit more efficient and easier for growers, and potentially the extension researcher or educator," Borowiec said. "We want to come up with a system that will assist in identifying, correctly documenting and sharing information about pests."

Successful IPM hinges on correct insect identification. But since it requires time and expertise, many growers forgo it and apply pesticides unnecessarily.

Immediate insect identification and classification is one element of the planned system. Information sharing via a free mobile app



Marek Borowiec is working on a new system that will allow farmers to quickly and easily identify insects.

Courtesy of Aryn Baxter

is another. It will focus on the Inland Northwest but be designed so it can be extended to other regions.

Borowiec, an assistant professor of entomology, plant pathology and nematology, said growers would immediately be able to see the correctly identified insect, follow what other farmers in their region are experiencing, access online resources and connect with

specialists.

Now, when they see an unfamiliar insect on a crop they have to contact a university extension agent or other researcher. He said smartphones, online alert networks and information portals help but require identification, documentation and other steps that can take time.

The artificial intelligence is "basically the capacity to

attach a certain name or classification to a photograph," feasible for computers only in the past four to five years. The problem is complex since a photo includes many variables, ranging from angle and background to the subject's size, position and distance.

Researchers will collect images of insects on cereals and legumes. The images will be used to "train" an arti-



Cereal grass aphids.

MAREK BOROWIEC

Title: Assistant professor, entomology, plant pathology and nematology, University of Idaho.

Education: Bachelor's and master's degrees, University of Wroclaw, Poland; Ph.D., University of California-Davis.

Age: 36

Hometown: Moscow, Idaho.

Family: Engaged to Aryn Baxter, lecturer on education in leadership for organizations, University of Dayton.

Hobbies: Outdoor activities including hiking, trail running, skiing.

Research team: Arash Rashed, Sanford Eigenbrode and Lucas Sheneman, and postdoctoral researcher Subodh Adhikari.

ficial-intelligence algorithm.

For example, photos of cereal grass aphids — an important emerging pest, Borowiec said — and the English grain aphid were used to "train" a preliminary

version.

"You have to have lots of examples of these pests in photos so it can learn the important features," he said.

Later in the four-year project, researchers will design the free identification and analysis tool, get feedback from stakeholders and work on improvements.

"On a parallel track, we plan to collect more data and more images to make the ID algorithm work better and make the interface friendly to users," Borowiec said.

An advisory board to include cereal crop growers and possibly commodity commission representatives is planned.

The system "has the potential of being as accurate or more accurate than a human expert, with a fraction of the time needed for making a determination," he said. It aims to enable farmers to more quickly optimize pesticide management decisions.

"The idea is to not have to work as hard to improve your decision process, be more likely to make a good decision, and even save some money," he said.

This story first appeared May 21, 2021.

METAL BUILDINGS!

*53 Years of Manufacturing Excellence
Buy Factory Direct!*

**Equipment Storage • Shop • Barn
Hay Shed • Dairy Shade • Arena
Roofing, Siding, & Trim**

Photo by B. Selyem

Call Today!

R & M STEEL COMPANY

R&M Steel Co.

208-454-1800
www.rmsteel.com
sales.rmsteel@gmail.com

5274187-1

CANYON Truck UPFITTERS

- CUSTOM BUILT FLATBEDS
- RUGBY RANCHER FLATBEDS - IN STOCK!
- SERVICE BODIES • DUMP BEDS
- TOOLBOXES • RECEIVER HITCHES
- GOOSENECK HITCHES • TRAILER SERVICE AND REPAIR
- TRUCK ACCESSORIES

www.canyontruck.com
 15881 Robber Place, Caldwell, Idaho 83607
208-459-0646

5275138-1

IMPROVE YOUR SOIL HEALTH FOR 2022 WITH THE BEST NATURAL FERTILIZER ON EARTH

PERFECT FOR PASTURES, NUTS, FRUIT TREES, VEGGIES, HEMP, AND EVERYTHING ELSE...

Nothing Is Better Than Chicken Soup for the Soil® for Farm, Hay, & Pastures!

Do you have a farm, hay field, or pasture? The nutrients in Chicken Soup for the Soil® will stimulate life in the soil, balance the soil ecology, and supply nutrients / trace minerals at a biological level. Happy, nutrient rich soil will help you grow higher quality crops, hay, and grass that is super healthy and delicious to eat... you can also expect increased yields.

Please take a look at the following testimonial of a large grass hay farm in Idaho. The first 2 pictures are before and after first cutting. The bright green grass is new growth.

INCREASE ORGANIC MATTER!

"I talked to Chris L. from northern Indiana yesterday and he said last year on half of his pasture he applied Chicken Soup. This winter when he pulled soil tests and his Chicken Soup side is 1% organic matter and 6 CEC. The other side is still .5% organic matter and 4 CEC. I thought you would find that interesting." Testimonial sent by Jesse H.

It is documented that for every 1% organic matter the soil will hold a minimum of 16500 gallons of water per acre. So if you increase your OM .5% you increase the water holding capacity 8,250 gallons per acre. Not Bad! -Jim Zamzow

Chicken Soup™ for the Soil

"Chicken Soup for the Soil" improves your soil by feeding the microbes and supplying all the nutrients most fertilizers neglect."

Perfect For Agricultural Use
 Hemp, Apples, Pastures, Almonds, Grapes, etc.

- Grow higher-quality fruits and vegetables with more color, better taste, and less bug infestations and disease.
- Contains all the nutrients we have identified over the years as being beneficial to edibles (includes sea nutrients, amino acids, humid, filmic, and other herbal extracts).
- All natural, toxin free, and bioavailable.
- Non-leaching formula / nutrients accumulate over time.
- Makes an amazing Compost Tea.
- Perfect for Gardeners, Growers, Farmers & Ranchers.

64oz Jug
\$34.95

+ FREE SHIPPING

*Makes up to 128 gallons with 1 tablespoon per gallon.

TOMATO SECRET

BLOOM KABOOM

TREE SECRET

MYCORRHIZAE

527678-1