

Do not export Genuity® Roundup Ready® Alfalfa seed or crop, including hay or hay products, to China pending import approval. In addition, due to the unique cropping practices do not plant Genuity® Roundup Ready® Alfalfa in Imperial County, California, pending import approvals and until Monsanto grants express permission for such planting.

At this time, Vistive® Gold soybeans have received full approval for planting in the United States but have not yet received import approval in certain export markets. While certain export approvals are pending, Vistive® Gold soybeans will be available in limited geographies only to growers who have signed a 2016 Vistive® Gold Soybean Grain Production Grower Agreement and agree to follow the stewardship requirements. Upon receipt of appropriate approvals, Monsanto will inform growers and determine whether the stewardship requirements will need to remain in place.

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B.t. products may not yet be registered in all states. Check with your Monsanto representative for the registration status in your state.

**IMPORTANT IRM INFORMATION: Genuity® RIB Complete®** corn blend products do not require the planting of a structured refuge **except** in the Cotton-Growing Area where corn earworm is a significant pest. See the IRM/Grower Guide for additional information. Always read and follow IRM requirements.

For more information regarding intellectual property protection for the seed products identified in this publication, please see [www.asgrowanddekab.com](http://www.asgrowanddekab.com).

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

**ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** Roundup Ready® crops contain genes that confer tolerance to glyphosate, the active ingredient in Roundup® brand glyphosate-only agricultural herbicides. Roundup® brand glyphosate-only agricultural herbicides will kill crops that are not tolerant to glyphosate. Tank mixtures: The applicable labeling for each product must be in the possession of the user at the time of application. Follow applicable use instructions, including application rates, precautions and restrictions of each product used in the tank mixture. Monsanto has not tested all tank mix product formulations for compatibility or performance other than specifically listed by brand name. Always predetermine the compatibility of tank mixtures by mixing small proportional quantities in advance. Acceleron and Design®, Asgrow and the A Design®, Asgrow®, Bollgard and Design®, Bollgard II and Design®, DEKALB and Design®, DEKALB®, DroughtGard®, Genuity Design®, Genuity Icons, Genuity®, Respect the Refuge and Cotton Design®, RIB Complete and Design®, RIB Complete®, Roundup Ready 2 Technology and Design®, Roundup Ready 2 Yield®, Roundup Ready PLUS®, Roundup Ready®, Roundup®, SmartStax®, Vistive®, VT Double PRO® and VT Triple PRO® are trademarks of Monsanto Technology LLC. Deltapine® is a registered trademark of Monsanto Company. Channel® and the Arrow Design® and Seedsmanship At Work® are registered trademarks of Channel Bio, LLC. LibertyLink and the Water Droplet Design® is a registered trademark of Bayer. Herculex® is a registered trademark of Dow AgroSciences LLC. Respect the Refuge and Corn Design® is a registered trademark of National Corn Growers Association. All other trademarks are the property of their respective owners. ©2015 Monsanto Company. R1

Before opening a bag of seed, be sure to read, understand and accept the stewardship requirements, including applicable refuge requirements for insect resistance management, for the biotechnology traits expressed in the seed as set forth in the Monsanto Technology/Stewardship Agreement that you sign. By opening and using a bag of seed, you are reaffirming your obligation to comply with the most recent stewardship requirements.



## Crops



# NDSU study to see if UAVs can help scout for weeds

**C**AN you scout for weeds with a UAV? Can you pick out the really bad ones — kochia, wild buckwheat, green foxtail, wild oats and Canada thistle? North Dakota State University researchers have received a grant to find out.

The aim of the project is to identify which weeds are infesting specific crops, which parts of fields the weeds are infesting and the degree of the weed problem.

“Crop producers and crop consultants need to identify specific weed infestations growing in various crop fields to implement effective weed management regimes,” says John Nowatzki, NDSU Extension Service agricultural machine systems specialist, the lead investigator on this project.

Nowatzki; Sreekala Bajwa, chairwoman of the Agricultural and Biosystems Engineering Department; and weed specialist Rich Zollinger have teamed up with Kris Poulson, Casselton-area ag producer and consultant, and agricultural lead for Sentera LLC in North Dakota, for the project.

Sentera, a company based in Shakopee, Minn., which designs sensors, unmanned aerial vehicles and software technologies for a variety of uses, is the private-sector partner on this project. Company per-

### Key Points

- NDSU receives grant to test UAV potential for scouting weeds.
- Researchers hope to ID kochia, wild buckwheat, wild oats and others.
- Identification will be based on light reflection and other data.

sonnel will provide hardware and software engineering support for data collection and imagery processing.

The North Dakota Department of Commerce awarded an \$85,500 Research ND grant for the weed project.

Project staff are using an NDSU hand-held radio spectrometer and color, thermal and infrared sensors to measure light reflectance, intensity and color of weeds growing in NDSU greenhouses. They'll use the same hand-held sensor to collect data throughout the 2015 growing season in outdoor plot and field weed patches at NDSU's Carrington Research Extension Center and Prosper Research Site.

Researchers also are using commercial sensors designed for manned and unmanned aircraft to collect reflectance values on the same greenhouse, plot and field weeds. The researchers will correlate the data from the commercial sensors and hand-held spectrometer, and then publish and share the results with commercial

agribusinesses and crop producers for use in their operations.

The weeds they are hoping to identify are kochia, wild buckwheat, green foxtail, wild oats and Canada thistle.

The researchers also are monitoring NDSU research fields and commercial crop fields on the ground to identify the weeds growing in each one. They'll monitor each field every other week with sensors and cameras to demonstrate the effectiveness of imagery in weed identification. They will use computer analysis software to establish positive identification.

### Finding weeds early

This research will help producers spot weed problems early in the growing season so they can select the proper herbicide and get it applied on the crop.

“Earlier herbicide application results in reduced weed competition with the growing crops and correlates with higher yields,” Nowatzki says.

Project results will be incorporated into NDSU Extension programs focused on helping producers and crop consultants use sensors to enhance their business activities. The information learned from this project also will be shared at a project field day.

Source: NDSU Extension