

Testimony in Support of HB 1249  
Submitted by: Greta Silewski  
Project Consultant, Thales USA  
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Chairman Jonathan Warrey and Members of the Committee,

Thank you for the opportunity to submit written testimony today in support of HB 1249. My name is Greta Silewski, and I am here to speak as a previous awardee of the North Dakota Department of Agriculture's Uncrewed Aerial Systems (UAS) Grant, funded through HB 1519 in the previous biennium. Our work under that grant has demonstrated the immense value of autonomous technology in advancing precision agriculture and protecting North Dakota's agricultural economy. I urge your continued support to ensure this critical work continues to drive innovation and protect our agricultural sector.

### **Successes of the Palmer Amaranth UAS and AI Project**

In 2023, through funding provided by HB 1519, we successfully executed the Palmer Amaranth UAS and AI Project—a collaborative initiative led by the Northern Plains UAS Test Site in partnership with Thales USA, North Dakota State University, iSight Drone Services, and Grand Farm. Our objective was to leverage UAS and AI technology to detect and mitigate the spread of Palmer amaranth, an invasive weed that poses a serious threat to North Dakota's food security.

Over the past year, our efforts have yielded remarkable results:

- **Data Collection & AI Development:** We conducted UAS flights across multiple locations, capturing over 40,000 high-resolution images to train an AI model for precise detection of Palmer amaranth. The AI model, developed using advanced object detection techniques (YOLO v8), achieved detection accuracy rates of 76-77%.
- **Farmer & Stakeholder Engagement:** We collaborated with farmers, county weed officers, and commodity councils to integrate our technology into real-world agricultural practices, providing a proactive solution to prevent infestations before they spread.
- **Scalability & Future Applications:** Our work has demonstrated the feasibility of expanding UAS and AI solutions beyond Palmer amaranth detection, enabling applications for nutrient management, crop disease detection, and precision weed mapping.
- **Role of Vantis in BVLOS Expansion:** As North Dakota explores ways to scale this project, integrating Vantis, the state's UAS system for beyond visual line-of-sight (BVLOS) operations, will allow faster, more efficient detection and treatment.
- **Broader UAS Ecosystem Expansion:** This project serves as a replicable model for other state departments and agencies, demonstrating how UAS technology can be leveraged in emergency response, infrastructure inspections, and environmental monitoring. Expanding these applications will strengthen North Dakota's leadership in UAS and autonomy.

### **Why Continued Funding is Necessary**

HB 1249 includes \$750,000 in autonomous technology grants under the North Dakota Agriculture Commissioner, which could directly support the continuation and expansion of projects like ours. This funding is essential for several reasons:

- 1. Protecting North Dakota's Agriculture:** Palmer amaranth, if left unchecked, can lead to significant yield losses and increased herbicide reliance. Early detection using AI-driven UAS technology has proven to be an effective and cost-efficient solution.
- 2. Enhancing Food Security Through Technology:** The integration of UAS and AI provides real-time data analysis crucial for identifying and mitigating agricultural threats, ensuring long-term food security.
- 3. Supporting Economic Growth & Workforce Development:** Expanding this program creates high-tech jobs and supports workforce training for North Dakota's next generation of agricultural and autonomous technology professionals.
- 4. Legislative Support to Foster Innovation:** By investing in these technologies, North Dakota is fostering collaboration between public and private entities to drive agricultural innovation and maintain its leadership in precision agriculture.
- 5. Replicable Across Other Departments:** The success of this initiative highlights the potential for integrating UAS solutions in other state programs, from transportation and law enforcement to environmental monitoring and emergency response. By broadening these applications, North Dakota can continue to lead in the deployment of autonomous technologies for public benefit.

## Conclusion

Our state's agricultural industry depends on forward-thinking policies and investments that address both current and future challenges. The success of the Palmer Amaranth UAS and AI Project under HB 1519 serves as proof of concept for how targeted funding can drive innovation and deliver tangible benefits to farmers and stakeholders. By renewing funding under HB 1249, we can continue protecting our food security, advancing technology-driven solutions, and fostering economic growth in North Dakota.

I respectfully urge the committee to support HB 1249 and ensure that funding for autonomous technology within our state departments remains a priority. Investing in these technologies will not only support agriculture but also expand North Dakota's leadership in UAS and its applications across multiple sectors.

Thank you for your time and consideration. Please feel free to reach out for further discussion or additional details.

Respectfully,  
Greta Silewski