

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION BY NORTH BEND WIND  
PROJECT, LLC FOR A PERMIT TO CONSTRUCT AND OPERATE THE  
NORTH BEND WIND PROJECT IN HYDE COUNTY AND HUGHES  
COUNTY, SOUTH DAKOTA

SD PUC DOCKET EL21-018

**PRE-FILED TESTIMONY OF DR. ADAM VARENHORST**

**Q. State your name.**

A. My name is Dr. Adam Varenhorst.

**Q. State your employer.**

A. South Dakota State University.

**Q. State your specific job at South Dakota State University.**

A. I am an assistant professor and Field Crop Entomology Extension Specialist in the Agronomy, Horticulture and Plant Science Department.

**Q. Explain the range of duties you perform.**

A. I oversee research related to the management of insects in South Dakota's major agricultural crops. See CV attached as Exhibit A.

**Q. What are your extension specialist duties?**

A. As the SDSU Extension Field Crop Entomologist I serve South Dakota stakeholders by addressing insect pest issues in field crops. I conduct applied research that focuses on corn, soybean, wheat and sunflower. I also assist the other extension entomologists to address questions pertaining to insect questions for the home and garden, urban insect pests and general entomology questions. Tasks that I am responsible for include: Development of insect related identification guides, fact sheets and timely electronic articles. Identification of insects related to field crops. Provide insect and insecticide safety content for the commercial applicator trainings held throughout South Dakota.

**Q. How were you contacted by the Bollweg family.**

A. I was previously contacted by the Bollweps in my role as a Field Crop Entomologist with SDSU Extension. At the Bollweps' request, I provided them with information and recommendations concerning red sunflower seed weevils and how farmers should manage

them.

**Q. What information did you provide about red sunflower seed weevils?**


A. The information I provided is as follows. The red sunflower seed weevil is a native pest of sunflower in South Dakota. When left unmanaged, the red sunflower seed weevil is capable of infesting approximately 80% of the developing seeds in a sunflower head. Since 2016, populations of red sunflower seed weevils have been observed in South Dakota that are 10-100x over the economic threshold of 4-6 weevils per sunflower head. In addition, SDSU Extension entomologists have received reports of insecticide application failures for red sunflower seed weevils since 2017. These reports were for the pyrethroid class active ingredient lambda-cyhalothrin. Since 2017, research from South Dakota State University has concluded that there are populations of red sunflower seed weevils with reduced susceptibility to pyrethroid class insecticides. On-going research is aimed at determining the level of reduced susceptibility and compare the populations tested in South Dakota to those from neighboring states. Our observations of red sunflower seed weevils in several counties in South Dakota during 2021 indicate that very large populations are present within fields. We are continuing to test populations using laboratory assays.

**Q. What information did you provide about how farmers should combat the red sunflower seed weevil?**

A. At this time, we recommend that all sunflower fields be scouted, and insecticides be applied when the threshold for red sunflower seed weevils is exceeded. Due to the numerous field failures, we are recommending that lambda-cyhalothrin not be used for management of the red sunflower seed weevil. We also are recommending that fields are scouted 24-48 hours after insecticide application to determine if the treatment successfully reduced the red

sunflower seed weevil populations. To prevent additional issues with labeled insecticide products we recommend tank mixing two insecticides with different modes of action (not including lambda-cyhalothrin) or using a product that is not from the pyrethroid insecticide class. A letter I wrote is attached hereto as Exhibit B.

Dated this 31 of January, 2022.

A handwritten signature in black ink, appearing to read "Adam Varenhorst", written over a horizontal line.

DR. ADAM VARENHORST