

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF
MONTANA-DAKOTA UTILITIES CO. AND
OTTER TAIL POWER COMPANY FOR A
PERMIT TO CONSTRUCT THE BIG STONE
TO SOUTH ELLENDALE 345KV
TRANSMISSION LINE

SURREBUTTAL TESTIMONY OF
GREGORY TYLKA

EL13-028

1. State your name and address.

Gregory L. Tylka, 922 New Hampshire Circle, Ames, IA 50014

2. Did you previously provide direct testimony regarding the B.S.S.E. Project?

Yes.

3. Have you reviewed the Henry Ford Rebuttal Testimony?

Yes.

4. Can you describe when and how SCN was originally discovered to be a threat to soybean production?

In the United States, first-time discoveries of new crop pathogens are usually announced by publishing a short article in a refereed scientific journal. Winstead and colleagues from North Carolina announced the first discovery of the soybean cyst nematode (SCN) in North America in 1954 in an article in the journal Plant Disease Reporter in 1955 (full citation at the end of this document; copy of publication attached). The circumstances of the discovery were that Winstead and colleagues examined soybean roots from a field of stunted, yellowed soybeans and collected soil samples from the field. They observed the telltale swollen females of SCN on the soybean roots and recovered other life states of the nematode from the soil samples.

5. Can you describe when and how SCN became a known risk in Eastern South Dakota?

Smolik and colleagues announced the initial discovery of SCN in 1995 in the state of South Dakota in a short article in the refereed scientific journal Plant Disease in 1996 (full citation at the end of this document; copy of publication attached). A total of 225 fields in 12 counties were surveyed and sampled for the presence of SCN that year (1995). And various life stages of SCN were recovered from soil samples collected from 11 soybean fields in Union County, in the southeastern corner of South Dakota.

6. Is the attached map reflective of the current presence of SCN in Eastern South Dakota?

Yes. The current known distribution of SCN in counties in the United States and the provinces in Canada is illustrated in the attached map, which was updated in early 2014.

7. How was this map prepared, and how long has it been available?

To my knowledge, a map of the counties and provinces in which SCN was known to occur has been updated and disseminated to plant pathologists and nematologists working with soybeans in the United States and Canada 11 times: in 1957, 1962, 1973, 1980, 1990, 2001, 2002, 2005, 2007, 2008, and 2014. There is no regular interval of time between updates of the map. I accepted responsibility for maintaining and updating the map in 2008.

To update the map, I phone and email personnel at universities and state departments of agriculture in all of the soybean-producing states in the United States and the soybean-producing provinces in Canada and ask them to provide me with a list of counties in which SCN has been discovered in their state to date. Then, once the updated, overall map is created, I send one person in each state or province a draft of the updated map and ask for final verification that the map for their state is accurate.

Once an update map is finalized, I send a copy to every person who provided information for the update of the map. I also send a copy to all other university personnel in the United States and Canada who I am aware of having responsibilities associated with soybean production. Finally, I send a copy of the updated map to anyone in the soybean industry and in the print and radio media with whom I have communicated concerning SCN in the past.

Dr. Emmanuel Byamukama was the person with whom I communicated at South Dakota State University when I updated the map for 2014; he is an assistant professor and extension specialist at the university with responsibilities for soybean diseases. I communicated with Dr. James Smolik at South Dakota State University when I updated the map in 2008; he was a professor and plant nematologist in the same department in which Dr. Byamukama currently works. Dr. Smolik would have been the person who provided information about SCN in South Dakota for maps updated prior to 2014.

8. Are there other agricultural resources which have published information about the risks posed by SCN?

Yes. There are numerous articles published each year by agricultural print media about the threat of SCN to soybean production in the Midwest. Also, university faculty and extension personnel in the region conduct several radio interviews each year on the same topic.

I, personally, have given several interviews to media (print, radio, and television) that serve soybean farmers in North Dakota and South Dakota (for example, an interview with Randy Koenen, Red River Farm Network, May 15, 2014). Also, I have given several presentations about the biology and management of SCN in South Dakota (as recently as in Brookings on February 5, 2014).

Another primary means of educating farmers about the risks of SCN is creation and distribution of printed extension bulletins by the land-grant universities in each state in the Midwest. Attached is a copy of South Dakota Extension Fact Sheet 902-A, "Soybean Cyst Nematode," which indicates that it was "Revised February 2007." This publication has a section titled "Sanitation" on page 3 of 4 that states "Anything that moves soil can move SCN. Avoid spreading SCN from infested to uninfested fields. If possible, uninfested fields should be planted first and equipment should be power-washed after working infested fields. Soil peds in seed stocks may contain SCN; therefore, plant only properly cleaned seed. Tillage practices that reduce wind and water erosion also can slow the spread of SCN."

The most notable (in my opinion) specific example of published information explaining the risks of SCN to farmers in South Dakota and other Midwestern states is a special insert in the national Soybean Digest magazine that was published in August-September 1998. A copy of that special insert is attached. The special insert, which was titled "Let's Declare War on Cyst Nematodes!" and was direct mailed to 240,000 farmers in the Midwest, was produced and printed by a 12-state educational effort team the "SCN Coalition". The "SCN Coalition" was called a "coalition" because it involved not only university personnel, but the staff of each state's soybean checkoff organization (including the South Dakota Soybean Association) as well as many private-industry seed companies who served farmers in the Midwest. The goal of the project, which operated from 1997 through 2000, was to inform farmers about the serious risk of SCN and to advise them on how to slow the spread and manage the build up of SCN once it arrived in a field. Page 6 of the publication contained a map of the known distribution of SCN in the Midwest at the time (with nine SCN-infested counties shown in South Dakota) and page 8 of the special insert contained an article titled "Stop Nomadic Nematodes"

9. **Are you aware of any other construction projects which have contributed to the spread of SCN? If so, please describe them.**

No, I am not aware of other construction projects that have contributed to the spread of SCN. But I am not aware of any scientific study ever being conducted to assess the risk for spreading SCN on construction equipment. Such studies have been done to confirm the risk of disseminating SCN by farm equipment. For example, a USDA report titled "Soybean Cyst Nematode" published in August 1956 stated, "Samples were taken of the soil and dust clinging to two combines that were used to harvest infested fields. Per pound of soil taken from these machines, an average of 4,156 cysts were recovered, of which 16.5 percent contained eggs with viable larvae."

10. **Does this conclude your testimony?**

Yes, except that immediately below are specific citations for the publications referenced above:

Anonymous. 1956. Soybean Cyst Nematode. United States Department of Agriculture Agricultural Research Service Report 22-29, 12 pages.

Anonymous. 1998. Let's Declare War on Cyst Nematodes! Soybean Digest, special insert. 24 pages.

Smolik, J.D., J.L. Jones, D.L. Gallenberg, and J.P. Gille. 1996. First report of *Heterodera*

