

MPIC-08-10

**2010 MSU G. W. Bird Nematology Laboratory Research Proposal  
to  
Michigan Potato Industry Commission**

**George W Bird, Nematologist  
Michigan State University**

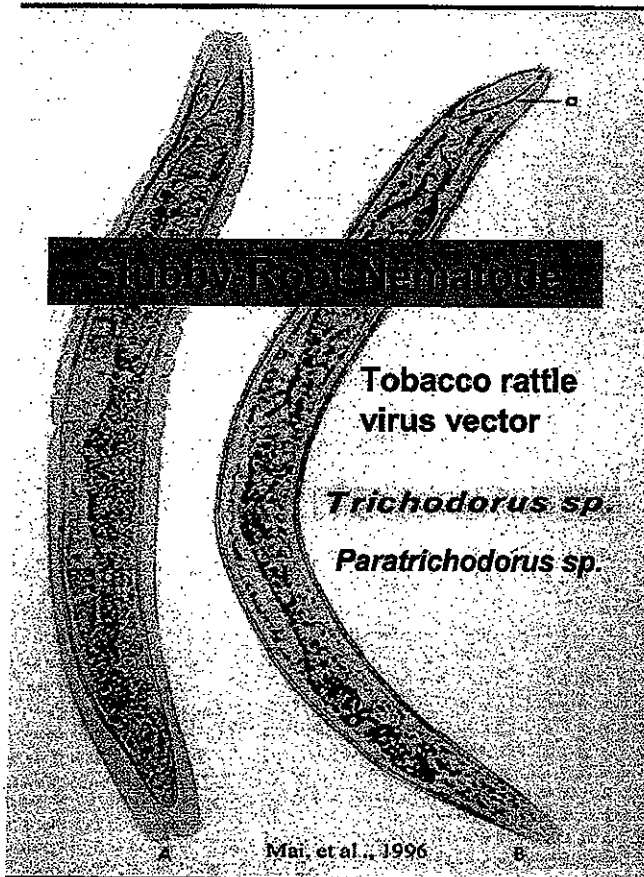
The 2010 MSU G.W. Bird Nematology Laboratory Research Proposal to the Michigan Potato Industry Commission is for \$15,000 and consists of two parts. The first is for research on Corky Ringspot Disease of Potato (CRDP) and the second is to develop a Nematode Management Pocket Field Guide for Potato Producers.

**Project No. 1.** Corky Ringspot Disease of Potato (CRDP) was present in Michigan (MI) potato production in 2007, 2008 and 2009 (Figure 1). The disease is caused by the Tobacco Rattle Virus (TRV) which is vectored by Stubby-Root Nematode (SRN) species. Eight species of SRN are known to exist in MI. Because there are no above-ground symptoms, the disease is difficult to diagnose prior to harvest. The incidence of CRDP is increasing in the North Central region. Recent observations indicate that stubby-root nematodes are increasing throughout Michigan potato production. Since corn and wheat are symptomless hosts of TRV, there is significant potential for CRDP to become a major limiting factor in MI potato production.

CRDP control research was conducted in both 2008 and 2009. While the results look promising, there is a distinct need to have a greater basis understanding of the viral pathogen present in Michigan and the nematode vectors. The proposed research is to 1) use electron microscopic technology to confirm the diagnosis of the pathogen, 2) conduct a 2010 stubby-root nematode survey of Michigan potato production and 3) identify the species of stubby root-nematodes associated with potatoes in MI. The research will be conducted by Loren Wernette as part of his M.S. thesis research. \$7,500 is being requested for Project No. 1.

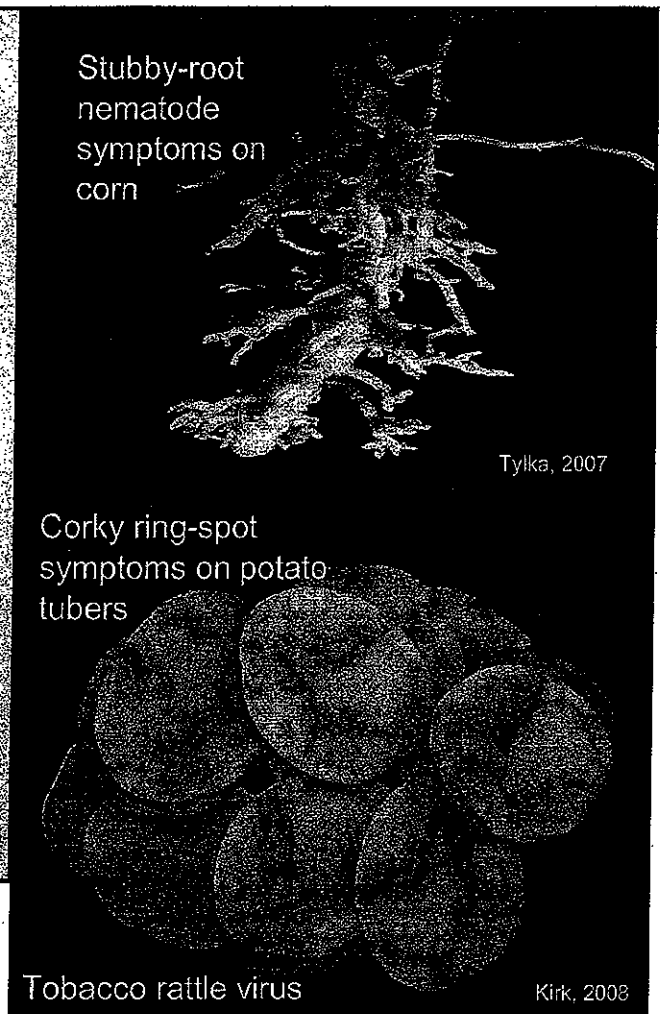
**Project No. 2.** There are five major types of plant parasitic nematodes that potato growers need to be aware of. These include cyst, root-lesion, stubby-root, potato rot and root-knot nematodes. Although in recent years, the root-lesion nematode has been the one that Michigan potato growers have had to deal with, the stubby-root nematode appears to be increasing in occurrence. Because of the major significance of cyst, potato rot and root-knot nematodes in potato production on a national and global scale. It is imperative for Michigan potato producers to have knowledge about these potential pests. The purpose of this project is to develop a Nematode Management Pocket Field Guide for Potato Producers similar to the one produced in 2009 by the M.S.U. G. W. Bird Nematology Laboratory for the Michigan soybean industry (each member of the MPIC Research Committee will be supplied with a copy of the soybean publication for their review). The major difference in addition to the commodity focus and the nematodes is that this document will have national and global value for potato producers. The Field Guide will be developed by Loren Wernette under the direction of Dr. Bird as part of this

MS. Program at MSU. A GREEN grant will be submitted for funding the actual production of the first 500 copies of the publication. Appropriate discussion will be initiated with MPIC for additional printings and sales for national and international distribution. \$7,500 is being requested for Project No. 2.



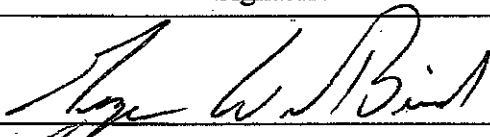

**Stubby-Root Nematodes of Michigan**

- *T. proximus*, *T. proximus*, *T. primitivus*, and *T. similis*
- *P. minor*, *P. atlanticus*, *P. prorsus* and *P. pachydermus*



**MICHIGAN POTATO INDUSTRY COMMISSION  
PROJECT BUDGET  
2010**

Principal Investigator(s)/Project Director(s)	Funds* Requested	Institutional Investment	Other *** Leveraged Funding
George W. Bird			
	Year 1		
<b>A. Salaries and Wages</b>			
1. Co-principal Investigator(s) G. W. Bird (0.011 + 0.022 FTE)			
2. Senior Associates	\$ -0-		
3. Research Associates – Post doctorate			
4. Other Professionals			
5. Graduate Students	10,311		
6. Prebaccalaureate Students			
7. Secretarial – Clerical			
8. Technical, Shop and Other (20 days at \$200/day)			
<b>B. Fringe Benefits</b>	\$927		
<b>C. Total Personnel Costs (A+B=C)</b>			
<b>D. Nonexpendable Equipment</b>			
<b>**E. Materials and Supplies</b>			
<b>**F. Travel</b>			
<b>**G. Publication Costs</b>			
<b>**H. Computer Costs</b>			
<b>**I. All Other Direct Costs</b>	3,762		
<b>J. Indirect Costs</b>			
<b>K. Total Direct Costs (E+F+G+H+I=K)</b>			
<b>L. Total Amount of This Request</b>	\$15,000		

Name and Title (type or print)	Signature	Date
Principal Investigator/Project Director George W. Bird		12/01/09
Authorized Department Head Ernest S. Delfosse		12/01/09

## **ABSTRACT**

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The 2010 MSU G.W. Bird Nematology Laboratory Research Proposal to the Michigan Potato Industry Commission is for \$15,000 and consists of two parts. The first is for research on Corky Ringspot Disease of Potato (CRDP) and the second is to develop a Nematode Management Pocket Field Guide for Potato Producers. The proposed Project 1. research is to 1) use electron microscopic technology to confirm the diagnosis of the pathogen, 2) conduct a 2010 stubby-root nematode survey of Michigan potato production and 3) identify the species of stubby root-nematodes associated with potatoes in MI. The research will be conducted by Loren Wernette as part of his M.S. thesis research. \$7,500 is being requested for Project no. 1. The purpose of this proposed Project No.2. is to develop a Nematode Management Pocket Field Guide for Potato Producers similar to the one produced in 2009 by the M.S.U. G. W. Bird Nematology Laboratory for the Michigan soybean industry. The Field Guide will be developed by Loren Wernette under the direction of Dr. Bird as part of this MS. Program at MSU. A GREEN grant will be submitted for funding the actual production of the first 500 copies of the publication. Appropriate discussions will be initiated with MPIC for additional printings and sales for national and international distribution. \$7,500 is being requested for Project No. 2.