**Progress report for July 2010 to September 2011)**
**Sponsor's Num:** 10DG11420004177

**Project Title:** The role of *Phytophthora cinnamomi* in recent oak mortalities in northeastern regions, one of the most destructive invasive forest pathogen.
**Project Leader**: Yilmaz Balci, University of Maryland, Department of Plant Sciences, 2114 Plant Sciences Build. MD, 20740, (301) 405 9744, ybalci@umd.edu
**Duration:** 06/01/2010- 09/30/2011
**Project award date:** July 12, 2010
**Project objectives:**
   1) [First year] Evaluate the association of *P. cinnamomi* with oak decline in various sites across the northeastern US
   2) [2$^{nd}$ year] Determine the current distribution of *P. cinnamomi* by sampling different latitude ranges across the study area
   3) [3$^{rd}$ year] Establish a database on the etiology of oak decline in northeastern oak ecosystems with a critical review of data obtained through this study and FHM/FIA data

We have obtained funding on beginning of July 2010. This has changed our proposed project timeline. Particularly, appointing a graduate student immediately was not possible. Thus, most of the fieldwork proposed in objectives 1 is conducted in 2011. The accomplishments up to September 2011 are;

1) A graduate student (MSc), , was accepted to the program to work on the project starting on January 2011. She has completed her first semester and started to collect data for objective 1.
2) An hourly student was appointed to conduct a literature search to establish a database on reports related to oak decline in the US and other oak forests.
3) Numerous sites have been sampled during the summer period. These included 35 sites located in OH, MD, PA, WV and DE. In each site root and soil samples were collected from four white oaks totaling 136 trees.
4) Out of the 35 sites, in 12 sites *P. cinnamomi* was isolated (MD 6, WV 3, OH 2, PA 1). The second baiting is in progress to eliminate false negatives and for the final count of number of trees.
5) When root data was analyzed trees with Phytophthora had less fine roots (0-1.5 mm in diam) than trees without Phytophthora. This was particularly pronounced in high moisture sites where white oaks had ca. 4 times less fine roots (p=0.0073).
6) Crown rating was not a good indicator of any root damage and no significant association was found with presence of *P. cinnamomi* and the crown status of white oaks when analyzed alone (although as we near completion of soil baiting this may turn into a mild significant association if additional positives are found). The effect of Altitude, slope and moisture were significant factors when all factors were combined.

Works to be completed for the next 3-month period:

   1) Complete baiting for Phytophthora for the second time from all negative soil samples
   2) Analyze the fine root data in connection with other stand parameters for areas infested with *P. cinnamomi* or free of the pathogen

3) Determine the inoculum level of soils that were positive for *Phytophthora* to analyze any correlation with decline or stand parameters
4) Establish an inoculation experiment to determine root lost on white, red and chestnut oaks using *P. cinnamomi* isolates from this study

For the field studies in Spring/Summer 2012 we plan to continue to collect data to benefit Objective 1 and 2. These will include re visiting the negative sites to sample for *Phytophthora* and sampling above the northern limit of *P. cinnamomi* to document the current spread of the pathogen. We also like to continue to sample root system of white oaks in different areas to establish a strong data set that will give a picture of the root status of white oaks along mid-Atlantic States and any possible connection with the presence of *P. cinnamomi*.