

Oak Wilt Suppression Pilot Project Goals & Methods - DRAFT

History of Oak Wilt on the Kerr WMA

Oak wilt symptoms (veinal necrosis) in live oaks were first detected in 2009 in a 2-acre area of the Kerr Wildlife Management Area. The infection site was located in the Doe Pasture approximately 250 yards south of the Donnie Harmel WTD Research facility along the paved road. Samples were sent to the diagnostic lab and confirmed as oak wilt. After discussions with WMA staff and outside professionals it was decided that no immediate action would be taken. The recommended methods for control, fungicide injections and trenching, did not appear cost effective and were not a guarantee to prevent further spread. The WMA staff also felt that the loss of some oaks was not a major concern given that there is a 20% survival and that oaks would be replaced with other woody species. The perimeter of the infection site was mapped, and the spread has been monitored and remapped every 1-2 years using a GPS to delineate any new trees that showed signs of infection. By 2018 the oak wilt site had grown to approximately 15 acres.

It was decided in 2018 that some form of action would be taken to prevent further spread. Protection of the research facility and the opportunity to investigate new control techniques were the primary motivations. A pilot project was formed to attempt a “chemical barrier” in place of a mechanical trench, which is the traditional treatment, around the area.

Project Goals

The goal of this pilot project is to investigate a new/novel control technique to prevent oak wilt from spreading further. A chemical barrier will be created using herbicide (Spike 20P) outside the known diseased center. Utilizing this chemical barrier will theoretically disrupt the transmission of the fungus through grafted root systems, which is one of the primary vectors of oak wilt infection in live oaks. Instead of using a physical barrier, such as mechanical trenching, pilot goal is to kill the roots of the trees that are on the perimeter of the infection site with herbicide so that the fungus is unable to spread. From literature reviews, oak wilt can spread through root systems on average 75 feet per year. Suggested distance from infected trees when using trenching as a suppression method is a minimum of 100 feet. Given Spike 20P can take up to two years to be 100% activated, the pilot project will utilize a 150 foot band of chemical application for barrier, where 100% of oak trees will be targeted.

Methods

We will be using tebuthiuron (Spike 20P) pellets applied aerially at a rate of 10 pounds per acre during the winter months (January-February). A line was established around the entire site that is 150 feet from the closest tree that shows visible symptoms of oak wilt. The 150 foot barrier was then created utilizing this line, keeping a minimum of 150 foot distance from the infection line to the outside of the barrier area. The pilot will be given this shapefile as a guide for increased accuracy. The applicator used has a fixed application width of 115 ft so we have instructed the pilot to allow some overlap between the two passes required to create the barrier. Therefore if we overlap by 50 ft then we will have a 180 ft strip (130 ft at the desired rate and 50 feet in the center with double the rate of approximately 20 lbs per acre). Flight logs will be shared after application for record of actual application area.

Activity Log/Field Notes

1/15/2019: The contractor arrived at 8:45 am and started flying at 9:30 am. Work was done by 10:00 am. He used a R-44 model helicopter. We asked to modify the line on the southern side to extend further south since we had found a positive tree within the 150 ft border the day before. He said he would square the area off when he flew and it should cover it, giving us a minimum of 150 foot from that tree. He flew two paths on each side, 115 ft wide, with a little overlap and the extra footage going to the inside of the area. He had extra chemical left and so flew another line on the inside of the border (extending the barrier area towards the known infection line) to use up the extra chemical. It did not extend our outside line of the 150 ft border. His spreader is handmade by him and has a flow meter on it (no commercial spreader with flow meter currently sold in US, there is one in AUS in the last year that came on the market.) The flow meter is how he guarantees the rate of 10 pounds per acre. For his set up, he flies between 65-70 mph to get the right distribution. He flies approximately 15 feet above the tree line when dropping. He only drops in straight lines, shutting off flow when he makes a loop or needs to turn. He said it will take 12 inches of rain for the Spike to become 100% effective/active. The actual pellets will dissolve and soak in much quicker. We should start seeing a kill on the area this growing season. It will stay active in the soil up to 2 years so no replanting in the drop zone.

Future Monitoring

Aerial pictures using a drone will be done every 3 months for monitoring purposes. The outer line of the chemical barrier will be periodically monitored for any suspect oak wilt infected trees. Consider an individual tree treatment if oak wilt positive cases are found within the barrier area before the two year time frame is complete. Final assessment of this project will take place in August 2021, at the end of the second growing season after treatment.