



The Connecticut Agricultural Experiment Station

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*Putting Science to Work for Society
Protecting Agriculture, Public Health, and the Environment*

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February 18, 2016

Mr. Ted Kennedy, Jr., Co-Chair
Mr. James M. Albis, Co-Chair
Environment Committee
Connecticut General Assembly

Dear Environment Committee Members:

At the request of Representative Kokoruda, I am submitting information on our research on running bamboo (*Phyllostachys* spp.) and my observations from the field. The bullet points are followed by more detailed observations below. Please note that the detailed observations are given in chronological order.

- Without a properly installed barrier system, running bamboo can extend 2-16 feet from the original planting within three years.
- With a properly installed barrier system, running bamboo has not extended into the surrounding landscape after three years.
- Where the barrier system was installed to the proper depth, rhizomes have not grown through or under the barrier over a six-year period.
- Where the barrier system was installed to the proper depth, but without an aboveground lip, surface rhizomes have to be cut annually to keep running bamboo where it is desired.
- Running bamboo can be effectively controlled with herbicides and does not require expensive and extensive digging, sifting, and soil disruption.
- As the State of Connecticut and many municipalities have running bamboo on their properties growing onto adjacent properties, it is not clear if this bill will obligate these entities to allocate funds to eradicate bamboo on their properties.

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An ornamental planting of running bamboo was established at our Valley Lab facility in 2009. To keep the planting from spreading a root barrier was put in afterwards. The root barrier (polyethylene, 60 mil) was placed to the proper depth (~30 inches), but without an aboveground lip as is now recommended. According to James Preste, Research Farm Manager, cutting the rhizomes where it is growing through the mulch requires 30-60 minutes per year. He reported there is no evidence of rhizomes growing through or under the barrier.

At the request of Dr. Louis Magnarelli, who was then Director of The Connecticut Agricultural Experiment Station and a member of the Connecticut Invasive Plants Council (CT IPC), I participated in a field tour of running bamboo sites with members of the CT IPC on August 16, 2012. We observed that improperly planted running bamboo (i.e., without a root containment system) can spread beyond the original site and become a problem in neighboring yards and gardens. We also observed that it can spread via rhizomes into adjacent fields, but did not extend into adjacent woods beyond the first row of trees.

In 2012, Dr. Magnarelli requested that I conduct research to determine whether running bamboo can be controlled and to determine its rate of spread from new plantings. A detailed description of the control research is appended at the end and can also be found at <http://www.ct.gov/caes/bamboo>. I found that cutting the culms (live canes) and treating the new culms with two foliar applications of glyphosate provided effective control of well-established running bamboo colonies that had extended beyond their original planting sites into surrounding natural areas. The effectiveness of this treatment combination was verified by members of CT IPC during a field trip on December 4, 2014 when we visited the two treated areas in Woodbury.

To examine the rate at which running bamboo spreads from new plantings, we established experimental plantings in spring 2012 at our three research farms in Hamden, Windsor, and Griswold. At each location, we planted golden fishpole bamboo (*Phyllostachys aurea*), yellow groove bamboo (*P. aureosulcata*), and spectacular bamboo (*P. aureosulcata spectabilis*). We compared the growth (height and number of culms or canes) and rate of spread (distance from original planting) of each species when not controlled with the treatment options of mowing around plantings and containing the rhizomes with heavy (polyethylene, 60 mil) liners. The liners extend 30 inches into the soil and several inches above the soil. In addition, we planted each species in plastic tubs sunk into the ground at Lockwood Farm in Hamden.

All plantings survived winter of 2012-2013 with minimal winter damage, but there was winter damage (culm mortality) during the winters of 2013-2014 and 2014-2015 for all three cultivars - with *P. aurea* completely dying to the ground (though new culms emerged by June 6, 2014). Without a root barrier, most plantings have expanded 2-16 feet from original planting with a typical spread of approximately 8 feet. For those bamboo planted within root barriers or within tubs, the rhizomes have remained contained and have not spread.

Lastly, it has been suggested that the rhizomes of running bamboo growing along riverbanks could be dislodged during flood events and the rhizomes washed downstream to start new colonies. I conducted a pilot study to examine the tolerance of yellow groove bamboo and Bisset bamboo (*P. bissetii*) to immersion in late summer 2014. Full details of study are at end of this report. In summary, Bisset bamboo rhizomes did not form new culms, probably because they require *in situ* vernalization (prolonged exposure to cold, but not freezing temperatures). The

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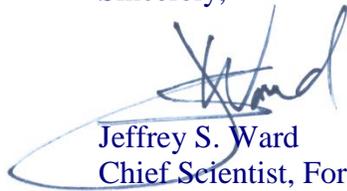
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number of new culms produced by yellow groove bamboo decreased with length of immersion and no culms were observed for rhizomes that had been immersed for 93 hours (~ 4 days).

On December 4, 2014 and September 24, 2015, I accompanied members of the CT IPC on a field trips to examine running bamboo growing along riverbanks that had been identified as sources of rhizomes that established new colonies downstream. While it was recognized that rhizomes could have been dislodged from two of the sites, it was the consensus of the group that the downstream colonies were not established from rhizomes dislodged from upstream, but had been established from improperly disposed culms or old plantings.

Please call or email if you have any additional questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jeffrey S. Ward", is written over a blue oval-shaped line.

Jeffrey S. Ward
Chief Scientist, Forestry and Horticulture

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