Replicated Bamboo Variety Trial

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Overview:

The purpose of this trial is to evaluate establishment and growth of seven bamboo varieties under western Washington field conditions, and determine their potential for shoot and pole production. The trial was established at Washington State University – Puyallup in 2001; seven varieties were planted in a replicated field trial and managed under conditions typical of farm-scale production. The varieties planted were Rubro (*Phyllostachys rubromarginata),* Golden *(P. aurea),* Nigra *(P. nigra),* Nuda *(P, Phyllostachys nuda),* Vivax *(Phyllostachys vivax),* Madake *(Phyllostachys bambusoides)* and Yellow Groove *(P. aureosulcata alta)* (Appendix).

Management:

Each plot measures 25 ft by 25 ft (625 sq ft), and contains 25 plants spaced on 5 ft centers. Plots are isolated from each other by 10-foot alleys, which are periodically tilled to discourage spreading of shoots.

Plants were fertilized in the spring of 2001 and 2002 with a balanced fertilizer (42 g/plant of 24-4-12 each year). In 2003 each plot received 5 lb of urea. No nutrients were applied in 2004, 2005, or 2006. The two center replicates received 100 lb N/acre applied as urea in June 2007 and April 2008.

The experiment received frequent light irrigations in 2001, two heavy (1 to 1.5-inch) irrigations in 2002, and five heavy irrigations in 2003. No irrigation was done in 2004 or 2005, and one heavy (1.2-inch) irrigation was done in 2006. No irrigation was done in 2007 and 2008, but the crop received timely summer rainfall both years.

In 2002 we spread a 4-inch deep woody mulch in each plot to help control weeds and conserve water. Plots were hand weeded as needed each year through 2004, and the alleys were tilled and sprayed with glyphosate. Two of the four replicates were thinned in 2004 and 2005, and the entire experiment was thinned in 2006. The plots were thinned again in 2007 and 2008.

Shoots were harvested on 10 dates between late April and July 2006. Shoot harvest in 2007 was spread over 12 dates. In 2008 cold spring weather delayed the beginning of shoot harvest until late May. Shoot harvest for 2008 is summarized in this report for 9 dates through mid July.

Results:
The bamboo established itself well during the growing seasons of 2001 and 2002 and grew rapidly in 2003 and 2004. Growth continued in 2005 through 2008. The plots have reached a state where they are self mulching through litter accumulation.

2008 Yield: Yield trends among varieties were different than they had been in previous years with fewer, larger shoots. Most varieties yielded less than in 2006 or 2007, with the greatest declines seen for Nigra and Rubro. A late start to the harvest season and below normal temperatures throughout the spring and summer are likely reason for the depressed yield. Yellow Groove was an exception, with greater yields in 2008.

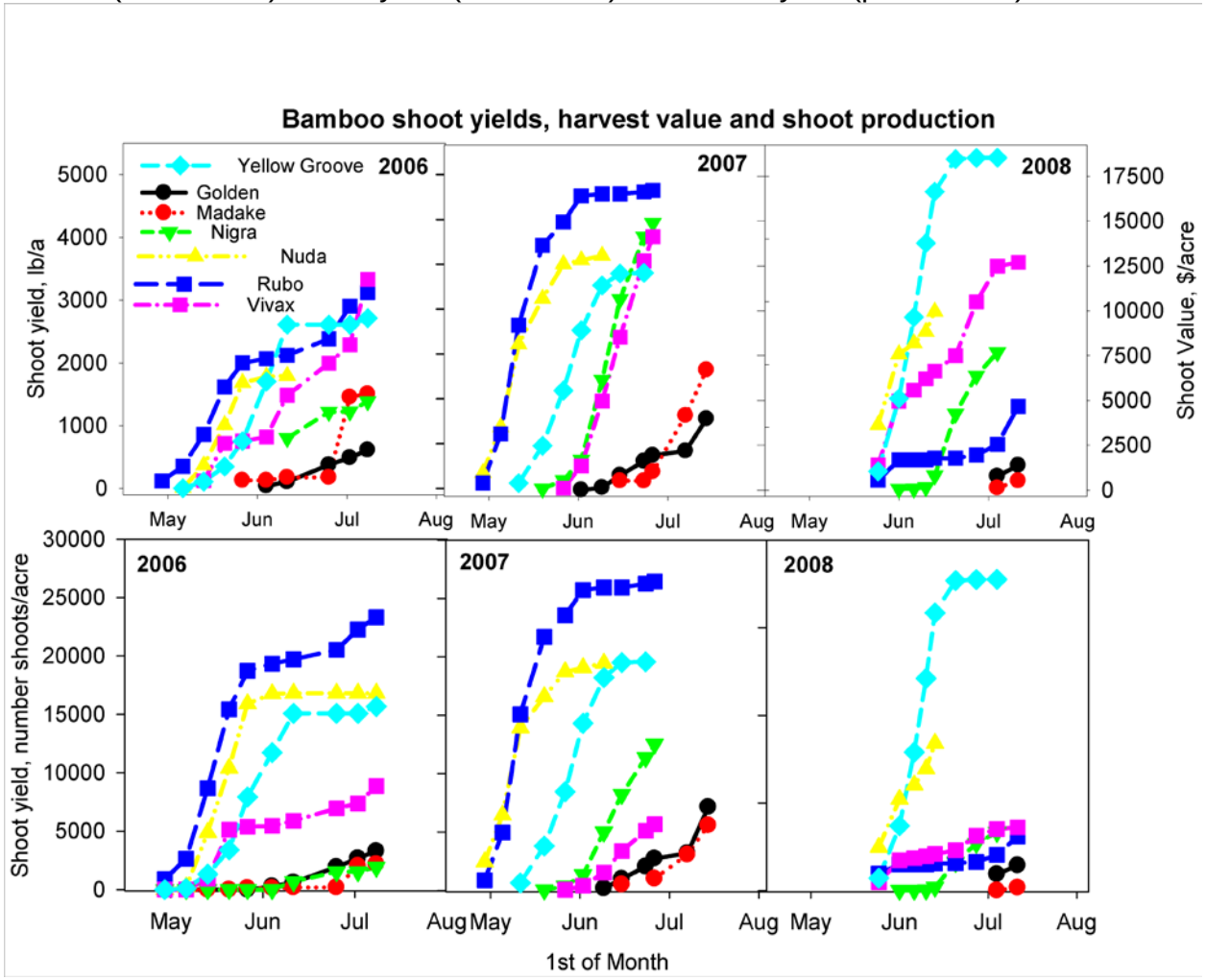
Proposal for 2009
Shoots will be harvested again in 2009, following a similar schedule to 2006 thru 2008 (approximate weekly harvests in the spring and early summer). If possible, harvest of late shooting varieties will be extended through July. Shoot number, yield, and weight per shoot will be determined. The plots will be again be split into two fertility treatments, with two blocks receiving nitrogen fertilizer and two blocks remaining unfertilized. Shoot harvest (2008 and 2009) will be compared between fertilized and non-fertilized treatments. After three years of yield data from the fertilized and unfertilized treatments, we will estimate an agronomic application rate based on our results, soil testing, and published guidance for bamboo production.

Plots will be pruned as in 2009 and alleys tilled to control spread of shoots and weeds. Irrigation will be provided as needed during prolonged spells of dry weather.

Budget Request

Budget Category	Amount $
Salaries	
Wages	$1,800
Employee Benefits	$178
Travel	
Supplies / Services	$472
Total Amount Requested *	$2450

Figure 1. Shoot number (cumulative), shoot yield (cumulative), and shoot yield (per harvest) at each harvest date



Appendix. WSU-Puyallup bamboo trial plot map.