

**Project No: New Project**

**Title: Blueberry Cultivar Evaluation at WSU-NWREC, Mount Vernon**

**Year Initiated 2007 Current Year 2007-2008 Terminating Year 2009**

**Personnel:**

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**Cooperators:**

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**Justification and Background:**

Blueberries are a relatively new, but economically viable crop in Washington State. In 2006, blueberries were harvested from 3400 Acres in Washington, up from 2200 acres only three years earlier ([www.usda.gov/nass](http://www.usda.gov/nass)). Blueberry acreage in the US is projected to double within the next ten years, with much of the growth occurring on the West Coast (Strik B. and Yarborough D., 2005. HortTechnology 15:391-398).

There has been a steady stream of new blueberry varieties released in recent years. While these new varieties represent opportunities for Washington State blueberry growers to improve fruit quality, increase production or to sell in more profitable market windows, they have not been adequately tested in our area. Most of the new varieties adapted to this area were developed in Michigan, New Jersey or Arkansas. Many new selections and cultivars are evaluated by the USDA in Corvallis and Aurora, OR. However, plant performance in Oregon is often quite different from that in western Washington, which generally experiences much cooler summer days. For example, many rabbiteye blueberry

cultivars perform well in the Willamette Valley, but fail to flower and fruit in Mount Vernon.

Washington State University's small fruit horticulture program is located in Mount Vernon, close to much of the Washington commercial blueberry acreage. It is an ideal place to evaluate blueberry cultivars for the region. Additionally, the best time to see a selection's performance is during the harvest season when it is the most difficult for growers to travel. WSU's Mount Vernon station is close to many of the blueberry growers, and is a relatively easy location to visit during the busy harvest season.

A large blueberry planting was established at WSU Mt. Vernon in 1994, added to in 1996, 2001 and in 2005. Establishing and harvesting these plantings has been supported by Northwest Agriculture Research Foundation,, the Washington Blueberry Commission and private donations. Funding of a portion of a Research Technician and some timeslip help is necessary to maintain in the plantings, harvest, and collect and analyze data collection.

**Relationship to WBC Research Priorities:** Variety trials-western Washington. Also relates to variety trials-eastern Washington, as the travel budget is for Walters to travel to Eastern WA to confer with Schreiber and with growers on trials there. This proposal also includes funding for blueberry netting more compatible with machine harvesting, which will eventually give us the potential to study machine harvesting for fresh market at WSU-Mount Vernon.

**Objectives:**

1. Establish and maintain demonstration plantings of blueberries at WSU-NWREC Mt. Vernon to enable growers and processors to evaluate potential new cultivars.
2. Establish and maintain replicated plantings of blueberries at WSU-NWREC Mt. Vernon and collect objective data on yield, fruit quality and susceptibility to pests.

**Procedures:**

The Research Technician and timeslip help will help to maintain the plots, evaluate material and assure data collection.

Blueberry cultivars for trial were planted at WSU Mt. Vernon in 1994 and 1996. Much of the 1994 planting was removed in 2005 to make room for new trials. However, a single plot of each cultivar has been kept for demonstration purposes. New USDA small-fruited and late-fruited selections were planted in 2003 and were evaluated for the first significant harvest in 2007.

In October 2005, plants of three newly released varieties and eight new selections from the MSU, University of Arkansas and USDA breeding programs will be established in a replicated planting, using funds for 2005 (Table 1).

Table 1. Blueberry Varieties and Selections established in Mount Vernon October, 2005.

New Varieties	Standard Varieties	New Selections	
Aurora	Bluecrop	MSU 36	A-287
Draper	Duke	MSU 60	A-439
Liberty	Elliott	MSU 63	A-246B
		A-98	US 645

Additional rows of Bluecrop (2 rows), Duke (10 rows) and Elliott (2 rows) were planted in fall 2005 for research on irrigation and nutrient management of blueberry. These may be harvested as early as 2008 for studies on irrigation deficit effects on fruit firmness.

A new irrigation/fertigation system was installed in 2006. This will improve the uniformity of the cultivar evaluation data, and will allow for irrigation and fertigation experiments within the plots.

Bird netting has to date been the sole effective means for preventing significant bird damage to the research plots. Although other means of bird control can be adequate for production, good research data requires uniformity in the field. Birds can readily destroy this uniformity. The current netting system at Mount Vernon is labor-intensive to erect and take down each year, and it restricts access for harvests and for plot maintenance. It also precludes mechanical harvest, as the support wires pass between the rows. We are requesting funds this year to purchase and construct a more user-friendly netting system which will allow for mechanical harvest.

Selected plots will be harvested in 2008. Additional funds to collect the harvest data will be requested from the Northwest Agricultural Research Foundation (NARF).

**Anticipated Benefits and Information Transfer:**

Cultivars and selections from the WSU program and other programs will be evaluated at WSU Mt. Vernon and their characteristics in Northern Washington determined. This information will be reported in annual reports, at grower meetings and field days.

**Budget:**

Amount allocated by Commission for previous year: \$8,608.

	2007
Salaries <sup>1/</sup>	\$2,938
Timeslip labor	\$2200
Operations (goods & services) <sup>2/</sup>	\$500
Travel <sup>3/</sup>	\$750

<b>Projected Needs</b>	
<b>Meetings</b>	
<b>Other</b>	
<b>Equipment<sup>4/</sup></b>	\$2000
<b>Employee Benefits-RA<sup>5/</sup></b>	\$1,146
<b>Employee Benefits-Timeslip</b>	\$345
<b>Total</b>	<b>\$9,879</b>

<sup>1/</sup> Research Associate, 0.083 FTE.

<sup>2/</sup> fertilizer, pesticides.

<sup>3/</sup> Trips to Eastern WA to consult with growers and A. Schreiber on establishing trials there.

<sup>4/</sup> bird netting and maintenance.

<sup>5/</sup> RA benefits 39%; timeslip 15.7%.

**Other support of project\*:**

Approximately 0.75 FTE of a Research Associate is provided to the small fruit horticulture program by the Agricultural Research Center in the first two years.

A substantial amount of equipment costs for this project (for example vehicle, balances) are covered by the Agricultural Research Center of Washington State University. WSU is also providing facilities and locations at Vancouver and Mount Vernon.

\* Budget data provided in “Other support of project” is for informational purposes only, for the Commission to understand the scope of the project. These estimated costs are not presented as formal cost-sharing and therefore do not constitute a cost-share obligations on the part of Washington State University. Moreover, there is no requirement for WSU to document this other support of project as part of any cost-share or matching obligation.

***Current & Pending Support (1 of 2)***

Name (List PI #1 first)	Supporting Agency and Project	Total \$ Amount	Effective and Expiration	% of Time Committed	Title of Project

	#		Dates		
	<b>Current:</b>				
	WA State Blueberry Commission				Irrigation deficits at critical blueberry developmental stages
Walters	(same as above)	\$9,943	2007	0.1	Blueberry cultivar evaluation an WSU-NWREC
Walters	NARF	\$8,608	2007	0.1	Evaluation of Small Fruits at WSU Mount Vernon
Walters	Washington Red Raspberry Commission	\$11,760	2007	0.2	Irrigation deficits at critical raspberry developmental stages
Walters	(as above)	\$9,437	2007	0.1	
Pinkerton	(as above)	\$5,913	2007	0.1	Effects of drip tape placement on spread of raspberry root rot caused by <i>Phytophthora fragariae</i> var. <i>rubi</i> .
Walters	Washington State Pesticide Commission	\$5,913	2007	0.1	
Miller	(as above)	\$46,108	2007	0.1	(as above)
	USDA-ARS Methyl Bromide Alternatives Program				Methyl Bromide alternatives for red raspberry and forestry nurseries

**Current & Pending Support (2 of 2)**

Name (List PI #1 first)	Supporting Agency and Project #	Total \$ Amount	Effective and Expiration Dates	% of Time Committed	Title of Project
Walters	<b>Pending:</b>	\$46,630	2008	0.2	High-value crops under high tunnels in western Washington
Miles	WSU Emerging Research Issues	\$61,589	2008	0.2	Evaluating the effectiveness of organic nutrient management strategies in high value small
Davenport		\$9,180	2008	0.2	

Hochheisel	program	\$7,483	2008	0.1	fruit crops
Olmstead	(as above)				Evaluation of small fruits at WSU Mount Vernon
Peters	NARF				
Walters	Washington Red				Irrigation deficits at critical raspberry developmental stages
Walters	Raspberry Commission				
Walters					