

## FINAL PROJECT REPORT

**Project Title:** Economic Analysis of Technology Adoption by Washington Apple Growers

<b>PI:</b>	Mykel Taylor	<b>Co-PI(2):</b>	Karina Gallardo
<b>Organization:</b>	WSU-SES	<b>Organization:</b>	WSU-SES
<b>Telephone:</b>	(509) 335-8493	<b>Telephone:</b>	(509) 663-8181 ext. 271
<b>Email:</b>	<a href="mailto:m_taylor@wsu.edu">m_taylor@wsu.edu</a>	<b>Email:</b>	<a href="mailto:karina_gallardo@wsu.edu">karina_gallardo@wsu.edu</a>
<b>Address:</b>	Hulbert Hall, Rm 103C	<b>Address:</b>	1100 N. Western Ave
<b>Address 2:</b>	PO Box 646210	<b>Address 2:</b>	
<b>City:</b>	Pullman	<b>City:</b>	Wenatchee
<b>State/Zip:</b>	WA 99164-6210	<b>State/Zip:</b>	WA 98801

**Cooperators:** Tom Auvil – WTFRC  
Karen Lewis - WSU Extension  
Norman Suverly - WSU Extension

**Total Project Funding:** \$23,368

### Budget History for 2009:

<b>Item</b>	<b>Budgeted (\$)</b>	<b>Expenditures (\$)</b>	<b>Encumbrances (\$)</b>
Salaries	0.00		
Wages	15,557.00	3,074.20	8,561.00
Benefits	2,111.00	28.39	615.02
Equipment	0.00		
Supplies (survey)	0.00		
Travel	3,000.00	456.50	180.00
Survey	200.00		10,000.00
Extension Support	2,500.00		
<b>Total Budget</b>	<b>23,368.00</b>	<b>3,559.09</b>	<b>19,356.02</b>
<b>Remaining Balance</b>			<b>452.89</b>

**Notes on Budget:** The cost of administering the survey was much greater than we anticipated when we planned the project budget. We therefore, reduced our expenditures in other areas (travel, extension support, and wages) to allow this survey to be completed as promised.

### **Original Goals of Project:**

The purpose of this research project was to determine the factors that impact technology adoption by Washington apple growers. The focus of the research was on labor-augmenting technologies, specifically platforms. The specific objectives of the study are as follows:

1. Evaluate the economic and managerial factors that contribute to a grower's decision to adopt automation and mechanization technologies.
2. Use the data collected during this project to support other educational programs and decisions aids focused on technology adoption.
3. Establish a program for continuously collecting production and management data from tree fruit growers.
4. Disseminate research results to tree fruit growers, packing houses representatives, researchers from other disciplines, and interested parties.

### **Significant Findings:**

This project was designed around a two-year implementation plan. Therefore, all the objectives listed above have not been completed. Rather than summarizing findings, we list the current status of the objectives at the mid-point of the project calendar.

1. Economic analysis of technology adoption: not completed. We are in the process of finalizing the grower survey that will be administered by the Social and Economic Sciences Research Center (SESRC). The survey will be sent out in January 2010 and results are expected in March.
2. Sharing data collected: partially completed. We have shared the cost of production numbers from the Gala budget with Clark Seavert. The budget data will also be used for presentations and break-even analysis at the 2009 WA Horticulture Meetings and two WSU Fruit Schools.
3. Collection of production costs data: completed. With the creation of a current Gala apple orchard budget and the planned update of a cherry orchard budget in December 2009, we are well on our way to establishing a portfolio of enterprise budgets that reflect current costs or production for modern orchards in Washington.
4. Dissemination of results: not completed. This will not be started until the platform survey is completed and the data are analyzed.

### **Results and Discussion:**

It is difficult to discuss findings at this point in the project. After completion of the grower survey, we will combine the information we have gathered on costs of production and include a scenario analysis of implementing platforms and the changes in costs and efficiency.

**Executive Summary:**

This project is progressing in a manner consistent with the two-year horizon outlined in the initial proposal. We have completed the Gala orchard budget and will be working on an updated budget for cherries in December 2009. These budgets have already been useful in preparing for presentation of break-even analysis at the Washington Horticulture meetings and two WSU Fruit Schools to be held in February 2010.

The grower survey is being finalized and will be ready to sent out on January 1, 2010. Data from the survey are expected in March and the subsequent economic analysis will commence. The graduate student that was funded by the project, a second-year PhD student, has been very involved in planning the survey will be responsible for several of the modeling and estimation components of the analysis. We anticipate being ready to present final results of the grower survey in Fall 2010.

The work we have planned for 2010 will be presented in new project proposal to the Tree Fruit Research Commission. We will request funding to continue supporting the graduate student working on this project. It is highly likely that the work we complete for this project will suggest other topics for future research and we plan to consider those for future projects.