

CDEA PD/GWSS BOARD PROGRESS REPORT
March 1, 2010

I. Project Title

The Benefits and Costs of Alternative Policies for the Management of Pierce's Disease

II. Principal investigator and cooperators

Principal Investigator

Professor Julian M. Alston

Department of Agricultural and Resource Economics, University of California, Davis

Co-operator(s)

Professor M. Andrew Walker

Department of Viticulture and Enology, University of California, Davis

Professor Kym Anderson

Department of Economics, University of Adelaide

Dr Mark Hoddle

Department of Entomology, University of California, Riverside

Professor Philip G. Pardey

Department of Applied Economics, University of Minnesota

Professor Jennifer S. James

Department of Agribusiness, California Polytechnic State University, San Luis Obispo

Professor Nicholas Kalaitzandonakes

Department of Agricultural Economics, University of Missouri-Columbia

Other

Dr Bob Sutherst, consultant, Brisbane, Australia

Ms Kate Fuller, Graduate Research Assistant

Department of Agricultural and Resource Economics, University of California, Davis

Professor James Sanchirico

Department of Environmental Science and Policy, University of California, Davis

III. List of objectives and description of activities conducted to accomplish each objective

The overall objective of the proposed research is to develop a detailed, practical, quantitative understanding of the economic consequences of Pierce's disease and alternative management strategies. More specific objectives are to quantify the current and potential economic impact of the disease, to estimate the potential economic payoff to investments in Pierce's disease R&D, to evaluate alternative management strategies including alternative research investments, and to guide policy decisions, including research priorities.

To pursue these objectives we will develop an economic model of the California wine and wine-grape sector. The model will be structured to allow us to simulate market outcomes under alternative scenarios for the prevalence of Pierce's disease, and alternative technologies and policies for its management, and to assess the economic consequences of these alternatives for various stakeholder groups. The model will be designed specifically with a view to using it to evaluate the likely expected benefits from investments in alternative R&D projects related to the management of Pierce's disease.

Our project commenced formally on September 1, 2008. Kate Fuller has been employed as a Graduate Research Assistant to work half-time on the project. Kate's doctoral dissertation work will form an element of the project. Jim Sanchirico, an expert bio-economic modeller, has recently been added to the team of participants and he is actively involved in co-chairing Kate's dissertation committee with Julian Alston.

In the work to date we have emphasized investment in developing our own knowledge and information resources. One important element of this is to develop a detailed data base on the economics of wine and wine grape production in California. We have completed the data gathering phase of this element. We are compiling this information into a report documenting by county and crush district for each important grape variety the area planted, yield, quantity produced (crush volume), price, and other such variables over the past 40 years. This information will be useful for other purposes as well as for parameterizing our model of the industry, which was our primary purpose for developing the data base. We have also made some investment in learning about how to structure and use models of spatial-dynamic processes such as the spread of disease.

We have made significant progress in developing an understanding of the pest and disease problem, and an overview of the issues, through consulting with scientists and others and reviewing literature. We have learned that the PD/GWSS problem will be more difficult in some ways to model than we envisioned, so we have opted to focus initially on studying the issues as they arise in the north coastal valleys where Pierce's Disease is endemic and spread by native sharpshooters. This approach has the advantage that the pest and disease is a more regular continuing phenomenon, which will enable us to develop some economic data and insight into the problem, management strategies, and costs of prevention, control, and eradication strategies. Taking this approach has enabled us to develop a better understanding that will help us in designing approaches to study the more general problem, including the role of the GWSS.

On January 14, 2010 we held a meeting in Sacramento with key people to review the status of the project and guide future directions. The participants included Bob Wynn, Tom Esser, Judy Stewart-Leslie, Joe Morse, Dan Sumner (moderator), Beth Stone-Smith, Sandy Purcell, Andy Walker, and Barry Hill, as well as Kate Fuller and Julian Alston. In the course of that very productive discussion we clarified a range of issues and ideas. We resolved to begin work in Spring 2010 gathering information pertinent to modeling Pierce's Disease as spread by the GWSS in the Central Valley, beginning in Temecula, and to continue consultation with other participants in the discussion, especially Barry White.

The objectives for the coming year are:

- To continue to consult with scientists and others to learn about Pierce's disease and industry technology as it relates to our project, and document what we have learned.
- Based on that knowledge, identify technological alternatives and policies to be evaluated
- Complete our work on developing data on the "economic geography" of the California grape and wine industry
- Complete the modelling work pertaining to Pierce's Disease as spread by native sharpshooters in the coastal valleys.
- Conduct comparable data gathering and vineyard-level modelling work pertaining to Pierce's Disease as spread by the GWSS in the Central Valley.
- Combine the various pieces of technological and market information to develop a market model and undertake initial applications

IV. Summary of major accomplishments and results for each objective

As described above, we have been developing data and other information but do not have any specific major accomplishments to report beyond making slightly delayed progress generally as planned towards achieving the specified objectives.

V. Publications or reports resulting from the project

Fuller, Kate B. "Optimal Management Strategies for Vector-Borne Agricultural Pests and Diseases: Theory and Application to Pierce's Disease of Wine Grapes in Northern California." Research essay, as required by the Ph.D. program in Agricultural and Resource Economics at UC Davis.

VI. Presentations on research

Alston, Julian M. "The Benefits and Costs of Alternative Policies for the Management of Pierce's Disease." Proceedings of the 2009 Pierce's Disease Symposium, Doubletree Hotel, Sacramento, December 9-11, 2009.

Fuller, Kate B., Sanchirico, James N., and Alston, Julian M. "The Benefits and Costs of Alternative Policies for the Management of Pierce's Disease: A Case Study of Pierce's Disease and the Blue-Green Sharpshooter in the Napa Valley." Poster presented at the 2009 Pierce's Disease Symposium, Doubletree Hotel, Sacramento, December 9-11, 2009.

VII. Research relevance statement

This project will contribute to solving the PD/GWSS problem in California by providing detailed, practical, quantitative information about the economic consequences of Pierce's disease and alternative management strategies. More specifically the project will provide quantitative information about (1) the current and potential economic impact of the disease, (2) the potential economic payoff to investments in Pierce's disease R&D, and (3) the benefits and costs of alternative management strategies (including alternative research investments), which can be used to guide policy decisions, including research priorities.

VIII. Lay summary of current year's results

In work on the project to date we have concentrated on gathering data and other information and learning about Pierce's Disease and the sharpshooters that spread it. Our progress has led us to revise some aspects of the research strategy, but the work has gone generally according to plan, albeit after a delayed start. We have focused attention to date on the disease as spread by native sharpshooters in the northern coastal valleys. We are about to shift attention to the Central Valley and the GWSS.

IX. Status of funds

Total expenditure by the end of January 2010 was about \$ 52,679. We have spent less of the funds to date than budgeted for the first year of work (1) because of some delays in the approval process and in establishing the grant account, (2) because we were able to cover some expenses related to this work from other sources, (3) because we have not yet been able to identify a suitable postdoctoral scholar to employ on the project, and (4) because we revised our approach based on things learned during the first phase of work.

X. Summary and status of intellectual property produced during this research project

None to date.