Washington State Fruit Commission
California Cherry Marketing & Research Board

****FINAL REPORT****

Cherry Health and Nutrition Committee
Scientific Advisory Board Meeting - January 8, 2015

(*Report Drafted February 2, 2015)*

Davis, CA

Introduction

The Washington State Fruit Commission (WSFC) and the California Cherry Marketing & Research Board (CCMRB) convened a one day Health & Nutrition Committee (HNC) meeting and a gathering of the sweet cherry industry's Scientific Advisory Board (SAB) on January 8, 2015 at the UC Davis Western Human Nutrition Research Center. BCI facilitated the meeting. Participants included:

SAB
Mike Rucier (BCI, Facilitator)
Darshan Kelley, SAB
Andrew Breksa, SAB
Giuliana Noratto, SAB

WHNRC
Lindsay H. Allen, UC Davis
Leslie Woodhouse, UC Davis

California
Chris Zanobini, CCB
Tom Gotelli, Industry
Jim Culbertson, Industry
Scott Brown, Industry
Jake Samuel, Industry
Mike Collins, Industry
Eric Stonebarger, Industry
Deborah Olsen, Industry
Joe Cataldo, Industry
Michelle Paul, BCI

Northwest
BJ Thurlby, WSFC
James Michael, WSFC
Ed Clark, Industry
Jim Kelley, Industry
Don Olmstead, Industry
Tate Mathison, Industry

Meeting Objectives

In addition to touring the WHNRC research facilities, the objectives of the meeting were to:

- Identify the top three health research objectives for the next three years
- Establish targeted budget recomendations and timelines to realize those objectives
- Develop a request for proposal for release to the scientific community spring 2015

Meeting Agenda

The agenda for the meeting was as follows:

9:00 – 9:15	Welcome, Introductions, and Meeting Expectations (BJ Thurlby and Chris Zanobini)
9:15 – 9:45	WHNRC Introduction – Dr. Lindsey Allen, Center Director
9:45 – 10:30	Tour WHNRC Facilities – Dr. Leslie Woodhouse
10:30 – 10:45	Recap of work done to date – Mike Rucier
10:45 – 12:15	SAB discussions about current research trends and prospects for sweet cherry research. Key questions to answer during this discussion: 1. What do we know about the chemical / phytonutrient composition of the fruit? What don't we know? (45 mins) 2. Based on what we know, what are the most promising research areas to pursue from a scientific perspective? From a commercial perspective (e.g. what could generate the greatest publicity?) What other commodities are also researching these areas? Is that a good thing or a bad thing? Is there misinformation being advertised about cherries that needs to be corrected? (45 mins)
12:15 – 1:00	Buffett / box lunch in meeting room
1:00 – 2:30	Develop Research Objectives. Key questions to answer during this discussion: 1. What are the top three research areas that the sweet cherry industry should pursue over the next 3-5 years? (30 mins) 2. What are the steps that are necessary to pursue each of these areas? What is the estimated timeline for each step and what costs might be involved? - Small group work lead by each of the SAB members (30 mins) 3. What are the immediate steps necessary for year 1? Group discussion, reporting on results from small group work (30 mins)
2:30 – 2:45	Break
2:45 – 3:30	Budget/resource considerations and research prioritization for year 1 and year 2. Key questions to answer during this discussion: 1. What are the ideal budget commitments needed from each organization to pursue research? 2. What grant resources are available? 3. What kind of research can the HNC expect to leverage from the research community?
3:30 – 5:00	Research RFP Development. Key questions to answer during this discussion:

1. Should the HNC issue an open ended RPF based on topics or should a singular topic be pursued? (This will depend on research costs and budget availability)
2. What elements / parameters are needed in an RFP?
3. What is the ideal timeframe for proposal due dates?
4. How should the RFP be released to best research the scientific community?
5. What is the process for making the placebo and powder available for research studies?

5:00 – 5:15	Meeting Wrap Up and Return to hotel
5:55	Meet in hotel lobby for transportation to dinner
6PM	Dinner (cocktails and appetizers at 6 | dinner at 6:30) Seasons

Meeting Summary:

The meeting was organized to gain consensus from the meeting participants related to each of the three objectives. The following summarizes pertinent discussion and key recommendations for each of the objectives. Complete minutes of the discussions are provided as an appendix to this report.

Objective 1: Identify Top Health Research Objectives

The SAB initiated most of the discussion related to identifying the top health research objectives that the sweet cherry industry should pursue over the next three years. Industry members offered perspectives related to the commercial viability of such research in terms of communicating results and building consumer demand.

Conversation topics focused on the need to better understand how the bioactive compounds in cherries react in the body, particularly as it relates to addressing conditions associated with metabolic syndrome, gout, and general inflammation. This would be accomplished through clinical end point studies, a "challenge meal" and animal studies. In addition, it was advised that general characterization of the cherry powder and placebo be conducted. This would include a long term shelf stability study.

Year 1 Recommendations:

- *Powder Characterization* - Engage a commercial lab to: (1) characterize both the cherry powder and placebo (development of a nutrient fact sheet, microbials, etc.); (2) Compare this to frozen fresh cherries; and (3) conduct a shelf life study on the powder to determine if the bioactive degrade with time (note labs can conduct an accelerated study)
- *Powder development* - Develop more powder and equal quantities of placebo to ensure adequate supplies for potential research studies. The results of the shelf life study will determine how much material can be produced and held in storage.
- *Animal Studies* – It was recommended that the HNC fund at least two animal studies related to the effects of preventing obesity related disorders and the consumption of sweet cherries
- *Challenge Meal Study* – A challenge meal study involves study participants being fed a high fat, high glucose diet which would normally have a negative effect on the body, then see what changes occur when fed the cherry powder.

- *Uric Acid and Gout* – At the same time that the challenge meal study is conducted, it was recommended to conduct additional blood draws to examine the effects of cherry consumption on uric acid levels. This would help researchers to draw conclusions regarding sweet cherry consumption on gout related symptoms.
- *Release RFP* – Challenge Meal study and Uric Acid analysis would be single source (no RFP) conducted by the WHNRC; Animal studies would involve RFP process – should fund at least two studies; Powder development should be conducted by same company that produced the original powder (Columbia Phytotechnology); Powder Characterization should be conducted by a private lab – quotes can be sought through requests for quotes

Year 2 Recommendations:
Powder production should be conducted annually or as frequently as material is needed. The shelf stability study should be completed and results provided. Any adjustments to the powder should be made. HNC should consider another round of animal studies budget pending as results from the first studies will likely be available within one year of initiation. The challenge meal study will be ongoing. In addition, it was suggested that feeding trials be initiated. This would help confirm clinical endpoints. A dose response study could also be considered at this point.

Year 3 Recommendations:
In year three, results from the challenge meal should be available. HNC should consider additional human trials and animal studies based on results. Again, the general focus would be on metabolic syndrome, but initial results might indicate more specific areas to study. Additional SAB analysis will be needed to determine specific research topics.

Objective 2: Budget Recomendations

In year 1, the total budget needed to reach all objectives would range from $240,500-$270,000. Currently, the NW has budgeted $200,000 while California is in a position to contribute $50,000 for a total health research budget of $250,000. The following table outlines cost estimates for each of the research initiatives over the course of the next three years:

Initiatives	Budget Estimate Year 1	Budget Estimate Year 2	Budget Estimate Year 3	3 Year Total
Powder Development	$15K	$15K	$15K	$45K
Powder Characterization*	$3-5K	$3-5K	$3-5K	$9-15$
Shelf Stability Study ***(costs spread over two years)***	$12.5 – 15K	$12.5-15K	0	$25-30K
Animal Feeding Studies (x2)	$60K *($30K each)*	$60K	$60K	$180K
Challenge Study ***(includes Uric acid study)***	$125K-150K	$0	$0	$125K-150K
Feeding Trial ***(costs spread over two years)***	$0	$150K	$150K	$300K
HNC and SAB Administration and Program Facilitation	$25K	$25K	$25K	$75K
Total:	**$240,500 to $270,000**	**$265,500 to $270,000**	**$253,000 to $255,000**	**$759,000 to $795,000**

*Note: Powder characterization should be conducted with every new lot of powder produced.

If additional budget is available, it is recommended that additional animal studies be considered as these are cost effective, can be delivered in one year, and can provide a constant flow of new findings to both drive additional research areas and to provide material for public relations efforts. Grants from the specialty crop block grant program could potentially cover a budget shortfall, but these funds are not guaranteed and have limitations regarding timing.

Objective 3: RFP Development

As was mentioned previously, it was recommended that only the animal studies be submitted to a formal RFP process in the first year. The other research initiatives are covered by either a single source contract (Challenge study), cost analysis (powder development, characterization, and shelf stability study). In the second year, the HNC might also consider an RFP process for feeding trials.

The SAB recommended that the HNC use the California Table Grape research RFP as a template (attached to this report as an Appendix). In addition, it was suggested that the RFP put a five page limit on the proposals (not inclusive of figures), seek a budget narrative, both a technical and non-technical abstract (the latter to benefit industry review), and set a word limit per section. Ideally, the RFP allows for a five week response period. The RFP should also specially state how the cherry powder and placebo should be used and should also provide the full chemical analysis and product characterization.

Many avenues were suggested for distributing the RFP including through the university research centers and to USDA (starting with Lindsey Allen, Area office/ Area director and Henry Hammet). The SAB can assist with distirbtion.

The SAB recommended that the HNC develop a review process for collecting, reviewing, scoring, and ultimately selecting research studies. The HNC facilitator will develop draft guidelines in this regard for review and approval by the HNC. In addition, a protocol is needed for how to deliver the cherry powder and placebo to potential researchers. It was suggested that we confer with the blueberry or grape industries and mimic their protocol. The HNC facilitator will contact both industries and develop an appropriate distribution protocol for review and consideration by CCB and WSFC staff.

Recommended Next Steps

The following next steps are recommended to be completed by Apri1 to allow for RFP distribution by this spring:

1. Finalize placebo powder production with Columbia Phytotechnology
2. Identify and seek quotes from commercial labs to conduct powder characterizations and the shelf stability study
3. Contact the blueberry and grape industries to seek recommendations for powder distribution protocols
4. Develop research RFP using grape research RFP as a template (circulate among SAB and HNC for review and approval)
5. Develop contact list for RFP distribution
6. Develop RFP review process
7. Initiate discussions with WHNRC regarding challenge study and start contracting procedures with USDA/ARS accordingly.

Please contact Mike Rucier, Bryant Christie Inc. (email: Mike.Rucier@bryantchristie.com or tel: 206-292-6340) with any questions or comments regarding this report or to obtain a copy of meeting materials.