

RosBREED to utilize socio-economic values to help breeders set breeding targets

By RosBREED's socio-economic team (Chengyan Yue, Karina Gallardo, Vicki McCracken, Ray Jus-saume, and Mykel Taylor)

Currently, breeders tend to make their breeding targets based on a production orientation using interactions between their viewpoints, industry input and market forces. We believe that breeders, as well as industry stakeholders, can benefit greatly by including in their decision making, the values and preferences of other market chain participants such as purchasing motives and consumer attitudes; their beliefs, concerns, constraints, and willingness to pay. As such, new cultivars would have targeted appeal to both large-scale and small-scale niche-market segments, be more quickly accepted, and have enhanced commercial impact.

In such a framework, we believe that breeders need market-based information on the impact of different traits for the entire supply chain to broaden the decision-making process. This information must acknowledge and involve different key stakeholders at early breeding decision-making stages. As a means of providing this information to the breeders, through the socio-economic component of RosBREED, we will be estimating social values and economic weights of fruit traits of five rosaceous crops (apple, peach, strawberry, tart cherry, and sweet cherry) valued by the key market chain members as outlined in Figure 1. We will gather information using multiple approaches including one-on-one interviews and telephone surveys. Some of the methods we will use are outlined below:

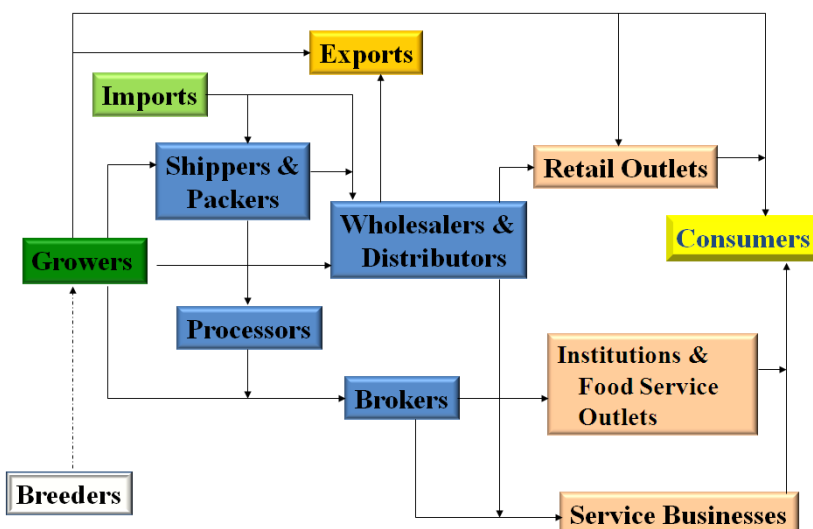


Fig.1. RosBREED's socio-economics team key stakeholders. Figure is adapted from the online power point presentation "Horticultural Marketing" by Uva, W. (1999).

Some of the methods we will use are outlined below:

Breeders' current trait selection practices: We will use a breeders' survey to determine specific traits under selection, current relative weights placed on those traits, traits for which they do not select due to limited staffing, technology, or knowledge, and how breeders perceive potential consumer interest in those traits. We will conduct these surveys with breeders in the U.S. through email and by phone and incorporate information on the feasible breeding traits in our subsequent surveys.

Producers'/processors' preferences and willingness to adopt new cultivars with specific fruit traits: We will send a questionnaire to a randomly selected sample of producers/processors in the three top-producing states for each of the five rosaceous crops targeted in RosBREED using a mixture of mail and internet surveys. This survey will include questions on preferences for fruit traits (color, size, texture, etc.) and production traits (flowering, growth habit, annual bearing, postharvest drop, etc.). Through this survey, we hope to obtain information that we could use as baseline parameters to test the likelihood of choosing a new cultivar with a specific trait under alternative plausible scenarios.

Market intermediaries' preference and values for fruit traits: We will also collect information on preferences and values for different fruit quality traits, as well as marketing constraints associated with these traits, along with collected size of operation, product sources, target markets, etc.

RosBREED socio-economics cont.



Consumer preferences and willingness to pay for fruit traits and market segments: We will conduct two major consumer-level research activities: (1) a national survey of consumers, and (2) a focused, non-hypothetical willingness to pay auction/experiment. These two components will allow us to investigate how consumers perceive fruit quality, both in terms of product and production characteristics, and how much consumers are willing to pay for fruits with different traits; assess different market segments; determine the degree of heterogeneity in fruit crop preferences; and analyze consumer attitudes and statistics that may be useful in explaining such heterogeneity. We believe that combining an economic experiment (without the limitations of a questionnaire type instrument) along with a survey (with a larger and more representative sample) will provide complementary data and more robust results than either method used alone.

Also, as part of the consumer preferences study, we are conducting consumer valuation analyses of intrinsic apple characteristics. Work is proceeding on data cleaning and model estimation of a hedonic pricing model (which is a model of the factors (such as quality) that affect prices, so price indices can be adjusted for changes in these factors) for apple varieties. Using grocery store purchases and household demographics, the model is designed to account for the heterogeneity of both consumers and the physical characteristics of common apple varieties. Early results indicate that price, seasonality, education, age, income, and household composition all affect the frequency and quantity of apples purchased. Work will continue to determine the intrinsic value of characteristics like sweetness and firmness, based on cultivar-specific purchases by consumers.

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Relative economic weights for fruit quality traits and production traits: We will use all information previously collected to develop and compare the relative economic weights of various fruit quality and production traits posed by different groups on the five crops targeted by RosBREED. We plan to calculate the relative economic weight for a trait as a weighted average of the marginal values that the three key audiences (consumer, market intermediary and producer/processor) place on the trait. We trust that the relative economic weight for each trait will provide accurate information about the overall importance of traits in

breeding programs and will supplement weights currently used. Also, all audiences will benefit by having more reliable insights into consumers' willingness to pay or producers' and processors' willingness to adopt.

We aim to provide:

- A transparent interactive process for determining social and economic values of production traits and fruit traits and their use in setting breeding targets will be established.
- A method for breeders to routinely use economic weighting of production and fruit traits for selection in Rosaceae MAB.
- Increase awareness of breeding and MAB from Rosaceae producer/processor, marketing group, trade organization and general public.

Who's Who in the Socio-economics Team?



Team Leader: Chengyan Yue
University of Minnesota

Role: to ensure that the Team's goals and deliverables are reached. This includes generating, disseminating, and evaluating surveys for breeders, market intermediaries, consumers, and producers.

Washington State University



Karina Gallardo

Role: to provide input in the decisions the team makes with respect to the directions of the research. For example, decisions on the type of questions and format to use in surveys (breeders, market intermediaries), facilitate input from industry representatives, choose appropriate economic analysis tools, and interpret results obtained.

Vicki McCracken

Role: to work with the other members of the Socio-economic Team on all aspects of the RosBREED project, in order to provide broad-based economic direction to the project. Vicki has been involved in the design and quantitative analysis of the breeder survey; designing the market intermediary survey; and early planning of the grower survey. Vicki was also involved in analyzing the national Nielson scanner panel data to characterize household apple variety demand. She will also be actively involved in all other RosBREED consumer-level research.



Nan Yang

Role: to perform data analysis and model building to obtain economic values of fruit traits. Nan is a postdoctoral researcher at Washington State University.

Mykel Taylor

Role: to analyze apple variety choice data based on national household-level data.



Ray Jussaume

Role: to provide input into survey design and implementation from the perspective of sociology.

University of Minnesota



Jim Luby

Role: to serve on the SE Team as a liaison with the rosaceous breeding community. Jim is an apple breeder and the Breeding Team leader.

Lan Liu

Role: to assist in survey and experimental design and data analysis.

