

Forecasting the Annual Almond Crop Production in California

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PROJECT SUMMARY

Objectives:

The primary focus of this project is to answer the following questions:

- What are the statistical operating characteristics of the existing methods for forecasting California almond production?
- What are the changes that can be made to the existing methods for forecasting California almond production that could improve their accuracy and precision?
- Can the Nonpareil production be forecast with better accuracy and precision?

Background and Discussion:

California is the largest almond producer in the world and the almond crop is a vital part of California's economy. It is thus crucial to have accurate predictions of the annual total crop for effective marketing and distribution of the crop.

The National Agricultural Statistics Service of the USDA (NASS-USDA) has developed and uses a plan to forecast the annual crop production together with its associated prediction interval. Previous predictions have been satisfactory but the Almond Board of California would like to improve the precision of the forecast intervals and develop an improved plan to predict Nonpareil production.

The research in the past year focused on the second and to some extent the third objective. Crop estimates are based on four components: estimates of the average nut weight, of the number of nuts per tree, of the number of trees

per acre, and of the number of acres planted in a given variety of almond.

The research in the first contract years have focused on the "nuts per tree" estimate, which is being adjusted to account for the fact that when large terminal branches are sampled, the corresponding nut counts tend to fall short of expectations, which are based on the assumption that counts are proportional to the branch cross sectional area. A similar problem exists for other tree branches, and so additional adjustments are being developed.

In addition, when *small* branches are sampled, the extrapolated nut counts are highly variable. An overall crop estimate that down-weights these observations will be more precise than one currently used that gives them equal weight.

The estimation of average nut weights has been based on samples taken from trees, without regard to the nut location within the tree or to the overall crop load for the tree. The way that these nuts are collected has been modified so that the relationships between nut weight and location within a tree can be studied. In addition, with the improved nut weight data, the relationship between average nut weight and the total nuts on a tree can be studied.

Finally, all of these adjustments to the estimation process can be done either without regard to the almond variety, or they can be customized for a given variety. Since Nonpareil almonds are a particular concern of this project, analyses specific to Nonpareil will be run, in addition to the overall analyses.

Project Personnel and Cooperators: Vic Tolomeo, USDA-NASS

For More Details, Visit

- Poster location 69, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2015) at Almonds.com/ResearchDatabase
- 2013-2014 Annual Reports CD (13-ABCBOD1-Wang); or on the web (after January 2015) at Almonds.com/ResearchDatabase