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:

1. What are the statistical operating characteristics of the existing methods for forecasting California almond production?
2. What are the changes that can be made to the existing methods for forecasting California almond production that could improve their accuracy and precision?
3. 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.

Question 1 of the objectives involves investigation of both the subjective grower survey and objective survey sample methods. There are several aspects to this investigation. One aspect is an identification of potential sources of bias and loss of precision, whether due to design choices, temporal changes, or sampling error. A second aspect is an evaluation of the relative contribution of these sources of bias or loss of precision to the forecast error. A third aspect is an evaluation of the current methods of estimating forecast bias and obtaining confidence limits for the California almond production. A fourth aspect is to utilize insights from almond production experts to enhance statistical models.

Questions 2 & 3 of the objectives involve analysis of the effects of feasible changes to the existing methods. This analysis may be mathematical or empirical in nature, and may involve a mix of computation and simulation. The key points of this analysis include evaluation of the information already available, the exploration of the causes of current forecast bias, and assessment of the effects of various changes in the survey methods. It may also be useful to explore whether additional data could provide further improvements.

Project Personnel and Cooperators: Neil Willits, Department of Statistics, UC Davis; Vic Tolomeo, USDA-NASS

For More Details, Visit

- Poster location 39, Exhibit Hall A&B during the conference; or on the web (after January 2013) at www.almondboard.com/researchreports