

ENVIRONMENTAL VARIABLES AND ALMOND PRODUCTION

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Objectives The objectives are to use environmental variables to develop a method of producing early, accurate forecasts of the almond crop. Temperature, humidity, water availability, and solar radiation are the most important factors.

Progress The 1979 results were fair to good but not as accurate as they should have been. Each of the forecasts was too low, especially the forecast of April 30.

Feb. 21	330-350,000,000 lbs.
April 30	295,000,000 lbs.
June 1	330,000,000 lbs.
June 25	335,000,000 lbs.

Data analysis seem to reveal two reasons for being too low. First, growing conditions after April 30 were almost ideal, with May temperatures being nearly perfect for almond growth and development. Temperatures were not hot but in all the growing areas were significantly above normal. At this time the forecast was increased to 330 million pounds.

	May Temperatures (°F)		
	1979	Average	Deviation
Chico	66.5	65.4	+1.1
Marysville	69.6	66.6	+3.0
Modesto	70.0	65.1	+4.9
Le Grande	68.7	66.0	+2.7
Fresno	71.1	67.4	+3.7
Bakersfield	74.9	69.8	+5.1

Temperatures in June were also well above normal but there were few if any excessively warm days. Trees were in good condition and water was available; these factors combined into a very productive month. The forecast prepared in late June was for 335 million pounds. Temperatures late in June and through July were below normal; the net effect of this temperature pattern was a slightly larger crop than might otherwise have been expected. After the crop was set conditions were essentially those of a "maximum" year; that is, temperatures, water, etc., were almost perfect after late April.

The second reason for the low forecasts could have been in the subjective area. When the forecast procedure is worked out it provides a range of possibilities. In 1979 each of my forecasts was at the time well above the conventional wisdom in the industry and among growers. Selecting toward the bottom of the range can account for only about a 2 percent lowering, however. As an example, if the data seem to indicate a crop of 320-330,000,000 pounds but everyone else is looking for 250,000,000 pounds I am more likely to select 320,000,000 as my forecast.

While each forecast was considered too high, most were followed by one even higher from the Crop Reporting Service.

Progress has continued but it is less dramatic than in past years. I am currently working more toward a model, probably of the "event tree" type.

Plans If the project continues I would continue much as in the past, concentrating on modeling and the influence of May temperatures. Unusual events, as lack of cooling, will also be studied.

Conclusion

Although the 1979 forecasts were not as accurate as in most past years they were useful to the industry as they indicated a crop much larger than others were expecting. Those of the Crop Reporting Service, coming along a bit later and a little higher, caused the belief that a large crop was in the offing. Also, in both 1978 and 1979 the industry could have benefited from a late July forecast.