

## 6.0 RESULTS

Sections 6.1 to 6.3 summarize the results of the field data estimation of yield loss functions for the ten primary study crops. Statistically significant effects of ozone ( $O_3$ ) were found for four crops, and of sulfur dioxide ( $SO_2$ ) for one crop. Overall, the results indicate this approach can identify the more ozone sensitive crops in the SJV, although the exact relationships between yields and ozone are difficult to isolate and the effects of ozone on the less sensitive crops are difficult to capture.

Section 6.4 reports the estimated yield losses from  $O_3$  and  $SO_2$  for all crops in the San Joaquin Valley included in the California Agricultural Resources (CAR) model, and reports other related assumptions used in calculating losses under the alternative scenarios. Where the regression results are used they are reasonably consistent with the chamber study results, and do not indicate actual losses in the field are being significantly mitigated by any measures other than changes in crop variety or acreage allocations. Air pollution crop yield damages range from zero to 34 percent, depending upon the crop.

The CAR model reveals significant benefits would have resulted from air pollution control in the SJV in 1978. As yields in the SJV increase, small decreases in price, and in acreage in the SJV and statewide occur to offset some of the economic gains. The importance of using an economic-behavior model rather than the simple damage-function approach is illustrated for grapes, where the damage-function approach estimates economic losses several times larger than those predicted with the economic model.

### 6.1 EFFECTIVENESS OF THE REGRESSION APPROACH IN ESTIMATING YIELD LOSSES FROM $O_3$ AND $SO_2$

The yield function regression results revealed relative ozone sensitivities largely consistent with the rankings expected from the chamber study results (See Figure A2-1). The yield function regressions for dry beans and cotton showed a statistically significant negative relationship between ozone and yields in all specifications. The basic yield function specifications for potatoes and lettuce showed a consistently negative but not statistically significant relationship between ozone and yields for some ozone measures. This was apparently the result of small sample sizes (26 and 34 observations respec-