water could make to the gross value of the crops produced. It would have been equally logical to define it as the decrease in the gross value of crops that would result from the loss of one acre-inch of water. In some circumstances these two definitions can give substantially different results. When this happens the marginal value of water cannot be defined unambiguously, and any value in the range spanned by the incremental definition and the decremental definition will serve. The marginal value of water is then said to be discontinuous. The practical effect of a discontinuity in the marginal value of water is that it is impossible by iteration to determine an initial guess that will result in a confirming estimate of the marginal value. But something nearly as useful occurs. If the initial guess is correct the decremental definition will give an estimate that is higher than the initial guess and the incremental definition will give an estimate that is lower. For a guess slightly below the correct one either definition will give an estimate that is higher than the guess; for a guess slightly greater than correct either definition will give an estimate that is lower than the guess. Thus a guessed marginal value of irrigation water can be found by iterating until the corresponding estimate changes abruptly from being above the guess to being below it, or vice versa. This guess will be the one that generates the optimal allocations of land and water among crops.

One or two technical aspects of our calculations should be mentioned to make the description more precise. There are two kharif crops, cotton and sugar cane, whose growing seasons overlap the Rabi season, and one Rabi crop, oil seeds, whose growing season overlaps Kharif. An acre devoted to any of these crops therefore cannot be used for double-cropping and in consequence in setting up the linear programming problem for the optimal land allocation such a crop must be considered to absorb land in both the Kharif and the Rabi seasons. Furthermore, those crops require water from the supplies available in both seasons.

As we set up the linear programming problem we sought for the allocation of land among crops that would make the net value produced as great as possible without using more land or water than was available in either the Kharif or Rabi seasons. Thus there were a total of four constraints imposed on the cropping pattern, two for supplies of land and two for supplies of water. One property of linear programming solutions is that typically they do not recommend the use of more methods for employing the resources at hand than there are resources. In the present context, therefore, a linear programming solution would recommend the growth of at most four different crops. Since this was deemed unrealistic, a number of additional constraints were imposed on the solution, namely that in no case would the acreage