

As the adjustments to the traditional shortage of water are manyfold, so will be the responses to its alleviation. The most direct response will be to increase the depths of irrigation applied to crops. Our studies indicate, however, that this change, though desirable from several points of view, will not lead directly to a significant increase in crop yield per acre during any one season. It is for this reason, principally, that the development of tubewells has to be treated as merely one aspect of a many-pronged attack on the problem of agricultural productivity.

The conclusion that agricultural yields cannot be increased significantly merely by providing more water was reached by comparing estimates of the amount of water required for maximum plant growth with estimates of the amount of water historically supplied to various crops, and by estimating the addition to actual crops that could be obtained by increasing the water supply to the maximum usable amount.

Table 5.1 presents a number of estimates of water requirements of major crops grown under conditions approximating those prevailing in the region commanded by the Lower Chenab Canal. The first five columns contain recommendations made by the authorities named. The sixth column gives estimates of potential evapotranspiration during the growing season of the crops. It was computed from estimates of monthly evapotranspiration potential, computed by the Weather Bureau, U.S. Department of Commerce, (See Appendix A. 1) applied to the sowing and harvesting dates given in Crops, Vegetables and Fruits in Pakistan (Karachi: Ministry of Food and Agriculture, 1959). In our opinion these figures are the most reliable estimates available of the amount of water that can be used beneficially by the crops. The amount of water a plant can use depends principally on the amount of solar energy available to it for transpiration, and this amount is fully reflected in the evapotranspiration potential. It is clear from the table that there is a substantial diversity of informed opinion about the amount of water that crops in the Indus Basin can use profitably. More work is required on this important problem.

In Table 5.2 evapotranspiration potentials applicable to major crops grown in the Lower Chenab Canal region are compared with apparent water supplies, for five crop seasons. Since no records are available of the depths of irrigation applied to various crops, the apparent water supplies given in this table are estimates prepared by us using the methods described in Appendix A.5. For the three Rabi seasons studied, actual water supplies were almost, if not fully, up to the evapotranspiration potential. In Kharif, actual water supply was substantially below evapotranspiration potential in one of the two seasons studied and moderately below in the other.