

From the published report on this project⁽³⁾, it is not clear how much of the increase in yield per acre resulted from leaching of the salt in the soils and how much was due to the increase in the quantity of irrigation water per acre, or to changes in the cropping pattern. Photographs and data given in the report show that in the neighborhood of at least some wells, the area of saline land was halved. In one case, the salinity of the reclaimed acreage decreased from more than 2 percent to less than 0.2 percent in the top 3 feet, and, in another, the salt content in the upper layer dropped from about 1 percent to an average of 0.5 percent. Owing in part to the small size of the project area, and in part to abnormally heavy rains, the tubewell pumping has not, as yet, lowered the water table very significantly.

The Principle of Interaction

The interaction of production factors is a fundamental principle for increasing agricultural production. High yields are attained when production factors are applied in the proper amounts and combinations. If a factor is minimal, then additions of that factor result in increased yields. Characteristically, the increase in yield per increment of factor added is not linear, but, beyond an optimum point, decreases progressively as the factor ceases to be limiting. When two or more factors are minimal, the addition of any one factor singly will have a relatively small effect on yield, whereas adding all minimal factors in combination will have a very considerable effect. Two or more such factors are said to have a large positive interaction, for the yield response to the combination of factors is larger than the sum of the responses to each separately.

This principle of interaction is a commonplace of agricultural science, but it could have such important implications for the development of agriculture in West Pakistan that it is desirable to give a few quantitative examples. These are shown in Tables 2.8 to 2.10.

Table 2.8 summarizes experiments with desalination and fertilizer on bermuda grass, an important pasture crop in the arid southwestern United States.

(3) "An Interim Report of the Effectiveness of Tubewell Reclamation in the Former Punjab Area of West Pakistan"; Tipton and Kalmbach, Inc.; West Pakistan Water and Power Development Authority; Lahore, West Pakistan; May 1961.