

Yields under irrigation are ordinarily much higher than in areas where farming depends on rainfall or other natural precipitation, especially semi-arid areas in which the rainfall is often inadequate and always uncertain. For example, in the southwestern states of the United States, where cotton is grown under irrigation, an average of two bales of cotton lint is harvested from each planted acre, while the traditional cotton-growing lands of the southeast produce only about one bale per acre. Canal-irrigated cotton lands in Pakistan yield only about 50 percent more cotton per acre than land without canal irrigation. In Hawaii, the irrigated sugar plantations produce each year a nearly unbelievable one hundred tons per acre of sugar cane, nearly five times as much as is grown in Louisiana and Florida. Canal-irrigated land planted to sugar cane in West Pakistan yields about 25 percent more than acreage which depends on rainfall.

Not only are farm yields low in Pakistan at present, they are not increasing at anything like the rates attained in some of the more advanced countries. In the United States during the 1950's, the yield per acre of rice, wheat, corn, and cotton increased by about six percent a year, as can be seen in Table 1.19. The yields of wheat in Mexico, of sorghum in the United States (similar to the jowar grown in Pakistan), and of corn in Japan and the USSR are increasing at a rate that should double productivity in less than ten years. In contrast, none of the major crops in West Pakistan, except possibly tobacco, have shown significant increases in yield per acre during the past decade, although total production of some of them has increased modestly.

The Problem of Waterlogging and Salinity

As soon as the new perennial canals of the Punjab were constructed and filled, it was noticed that the level of water in wells began to rise. Previously, the water table had been close to the surface only near the junctions of the rivers in the lower reaches of the Doabs, and under the narrow marginal plains along the river courses that were flooded each year during the monsoon. In the centers of the Doabs, away from these active flood plains, the depth to water was initially 50 to 70 feet.

This topography of the water table represented a dynamic equilibrium between infiltration of river and rain water in the northern region, underground flow, and evaporation in the southern parts of the Doabs. The equilibrium was upset by leakage from the new canals and water courses. At least a third of the water diverted to the canals percolated downward to the water table, and this greatly increased the over-all rate of infiltration.