use by crops. Blaney and Criddle[2] have given estimates of the effective monthly precipitation by major canal systems in West Pakistan. We have combined these for the Rabi and Kharif seasons (Map 1.5). The effective Rabi precipitation is below three inches, even near the foothills in the northeastern portions of Rechna and Chaj Doabs. During the Kharif season, the isohyet of 11 inches skirts the base of the foothills, and the effective precipitation diminishes along the axes of Bari, Rechna, Chaj, and Thal Doabs.

Variations in Rainfall from Year to Year

In the northern part of West Pakistan, the orographic influence of the mountains tends to damp out variability from year to year in total rainfall. This, together with the relatively high average annual precipitation, gives cultivators in dry farming areas a reasonable degree of assurance of water for their crops.

However, over most of the Former Punjab and Former Bahawalpur, and throughout Former Sind, the low average annual rainfall is accompanied by high year-to-year variability. A detailed analysis is provided in "Analysis of Precipitation Data from Rechna, Chaj, and Thal Doabs."[3] In Rechna Doab at Bachrianwala, annual precipitation ranged from 0.86 inches to 18.92 inches over the period 1916 to 1959. In Chaj Doab, at Dhaulka, the range was 1.28 to 18.81 inches. However, during seven years out of ten, the annual rainfall varied by a much smaller amount, from 3.5 to 11.8 inches at Bachrianwala, and from 5.0 to 16.6 inches at Dhaulka.

Temperature

Data from representative stations in West Pakistan on monthly mean maximum and mean minimum air temperatures, and monthly mean relative humidity, are in the Report of the Food and Agriculture Commission of Pakistan.[4] Diurnal ranges in air temperature are large during both summer and winter. In the winter, the Himalayas offer substantial protection against the intensely cold air masses from the vast Asian continent. As a result of radiative cooling, there is, nonetheless, some occurrence of frost over the Indus Plain, but it is seldom severe enough to damage the Rabi Crops.

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(2) H. F. Blaney, and Criddle, W. D.; "Report on Irrigation Requirements for West Pakistan," Tipton and Kalmback, Inc., Engineers, April 30, 1957.

(3) Water and Power Development Authority, Water and Soils Investigation Division, Technical Paper No. 1. 1960.

(4) Government of West Pakistan, Karachi, November 1960, p. 570–571.