

Over vast areas, the water rose steadily, season after season, at a rate of 1 to 2 feet a year, until it came within 10 to 15 feet of the land surface. After this level had been reached, the water table continued to move upward, though more slowly.

When one flies over the Former Punjab today, soggily wet land and even standing water can be seen near some canal margins, in old meander scars, drainage channels, and other low-lying areas. Where the water table has reached the root zone in the farmer's fields, it tends to drown out the crops by preventing needed aeration of the roots.

More serious is the capillary rise and evaporation of the underground water that occurs whenever the water table is within ten feet of the surface. The salts left behind by evaporation are deposited on the fields and in the soil; within a few years, the soil salt content builds up to a level that seriously inhibits, and may completely prevent, plant growth. For example, in an area where the underground water has a salinity of 1,000 parts per million, evaporation at a rate of 2 feet per year (a typical value when the water table is only a few feet deep) will raise the salt content of the top 3 feet of soil to about 1 percent in 20 years. This is too high for even the hardiest crops.

Ground water evaporation is only one of the causes of high salinity in the soils of the Former Punjab. The southern part of this region was initially a desert, and, as in all deserts, the alluvial deposits laid down by intermittent floods were accompanied by salt residues. The Punjab soils have undergone only moderate weathering, and at least in the southern area there may have been little leaching of their original salt contents.

✓ Irrigation practices have also contributed to salt accumulation. Water from the canals is spread so thinly over the land that the average quantity on the fields is less than the potential evapotranspiration during the growing season. Percolation through the silt soils is slow; consequently, none of the irrigation water washes down very far beneath the root zone before it has evaporated, and the residue of salt left by evaporation remains in the upper soil layers. Because of the remarkably low salt concentration of the canal waters, this practice does little noticeable harm over a short period, but over decades it must inevitably lead to damaging salt accumulations unless occasional floods or heavy rains wash the salt downward out of the soil.