

salinity. A drainage system to insure circulation of water through the soil is also essential, but this could be constructed and maintained much more economically if the cultivated areas were consolidated.

In the rice-growing regions of Larkana and adjacent Districts on the right bank of the Indus, the water table must actually be brought to the surface each summer to maintain water on the rice crop in the permeable soils. Under these circumstances drainage is essentially impossible, and during the rabi season, the water simply evaporates, leaving behind a deposit of salt. The resulting salt accumulation has brought about a continuing decline in the yield of rice per acre. This can be expected to persist unless the rice growing areas are shifted to a region where circulation of water can be maintained. Crops that do not require standing water should be planted in the present rice-growing regions. This would allow construction of a relatively economical drainage system.

#### Greater use of Commercial Fertilizers

On the basis of present negligible use, field observations, and tests, it is certain that marked increases in yield can be obtained through greatly accelerated use of nitrogen and phosphorus fertilizers.

The most extensive series of tests of the effects of fertilizer in West Pakistan was conducted by Dr. Abdul Wahhab, of the Lyallpur Agricultural College, on the winter wheat crop of 1960-61. Working in collaboration with Dr. J. G. Vermaat, of the Food and Agriculture Organization of the United Nations, Dr. Wahhab made a total of 650 trials on farmers' fields using the farmers' usual varieties. Varying amounts of nitrogen, phosphate, and potash were used. In general, the response to potash was small. A summary of the observed responses to nitrogen, and to nitrogen plus phosphate, is shown in Table 2.3.

It will be noted that an increase in yield of more than 300 pounds of wheat per acre was obtained by adding 30 pounds of nitrogen (as ammonium sulfate). Only a slightly greater increase was obtained by doubling the amount of nitrogen, but a marked improvement resulted by combining nitrogen and phosphate. With 60 pounds of nitrogen and 60 pounds of phosphate per acre, the yield was increased nearly 50 percent over that obtained from unfertilized plots.