The subject of yield-depression by plant nutrients has been previously treated by the writer (5). Briefly, it is found (2) that when a crop is planted in an otherwise normal soil deficient in a particular plant nutrient and is then treated with graded increments of that nutrient, the resulting yield curve will conform with the regular Mitscherlich-Baule yield equation; provided, that addition of the nutrient is not carried to the point of causing nutritional unbalance. In the latter case the yield curve will branch off on a different course that is determined by a coefficient, $k$, which measures the degree of nutritional unbalance. Where nutritional unbalance has thus been created, the whole yield curve is seen to be composed of two limbs, a lower limb that conforms with the normal yield equation $y = A (1 - 10^{-0.301x})$ and an upper limb that answers to the depression equation $y = A (1 - 10^{-0.301x})10^{-kx^2}$ which is the normal M.-B. yield equation modified by a depression constant $k$, the magnitude of which is dependent on the surrounding circumstances. In these equations $y$ is the obtained yield, $A$ the maximum possible yield, and $x$ the total amount of the nutrient in the soil. The numeral 0.301 is the normal effect factor of any growth factor when the amount of this factor, $x$, is stated in Baule units (baules).

In the previous paper the standard yield diagram was employed as a convenient means of demonstrating the depression-effect of nitrogen in field tests with corn, tea bushes, sugar cane, and sugar beets. In the meantime the study has been extended to a wide range of published field tests with various crops and fertilizers in the United States and abroad. The large proportion of cases where the yield curves have been found to exhibit the dual character of normality and depression shows that nutritional unbalance is imposing severe limits on productive agriculture. In view of the wide prevalence of the phenomenon, and its obvious agronomic importance, some examples of what has been found in this survey are given.

The term “yield depression” as here employed has been questioned. In the first three examples all the treatments have produced successive increases, and apparently there has been no depression. What is meant is that the increases should continue at the rate established by the lower normal limb of the curve; what happens is that, due to physiologic unbalance, the higher increments of fertilizer give increases at a rate less than the normal rate. With any given amount of fertilizer, the spread between the extension of the normal curve and the actual curve measures the deficiency from the normal yield; in other words, this spread measures the amount of additional yield that should have been obtained.