THE INTERPRETATION OF WATER-REQUIREMENT DATA.¹

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Some years ago the Utah Agricultural Experiment Station set forth the principle that the proper unit for measuring the crop-producing power of irrigation water is the crop produced per acre-inch of water rather than that produced per acre of land. Considerable data have been submitted by various Utah workers in which this unit is supposedly used in determining water requirements and duty of water.³ The present writer feels that many of these data have been presented with an emphasis that leads to erroneous, or at best only partially correct, deductions and conclusions. Judging from the general form of the publications above referred to, they are designed primarily for the practical farmer and are expected to point the way to actual field practice. For this reason, particularly, the present writer feels that the data should be rearranged or the arrangement enlarged to include a factor that so far has been largely overlooked.

The general statement that the acre-inch is the proper unit to use in measuring the crop-producing power of water is readily accepted, and its important bearing on farming operations should be urged on all irrigation farmers. In the determination of the yield per acre-inch of water applied, however, the starting point must be the expected dry-farm yield for the same crop on the same land. Only the increase in production above the usual unirrigated yield may be properly credited to the irrigation water. It is obvious that only in special cases will this point be zero. The Utah publications have used zero as a starting point in nearly all cases, or if they have considered the dry-farm value, it has not been given proper weight in their tables and conclusions. Fortunately, the published data give opportunity, in nearly every case, for a rearrangement on the basis of increase over dry-farm yields brought about by irrigation.

The present writer desires to submit the following proposition: "In figuring the comparative crop-producing power of a definite amount

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³ Note particularly Utah Agricultural Experiment Station Bulletin 115, 116, 117, 118, 119, 146, and 157.