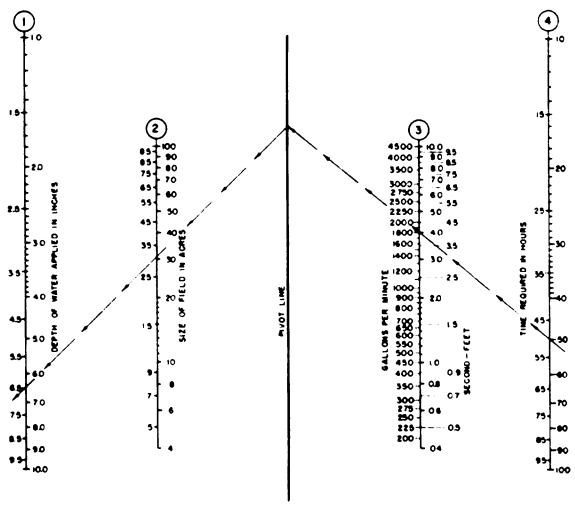


● 80
Collection

A GRAPHIC METHOD OF FINDING THE DEPTH OF IRRIGATION WATER APPLIED



Nomograph For Finding Depth of Water Applied

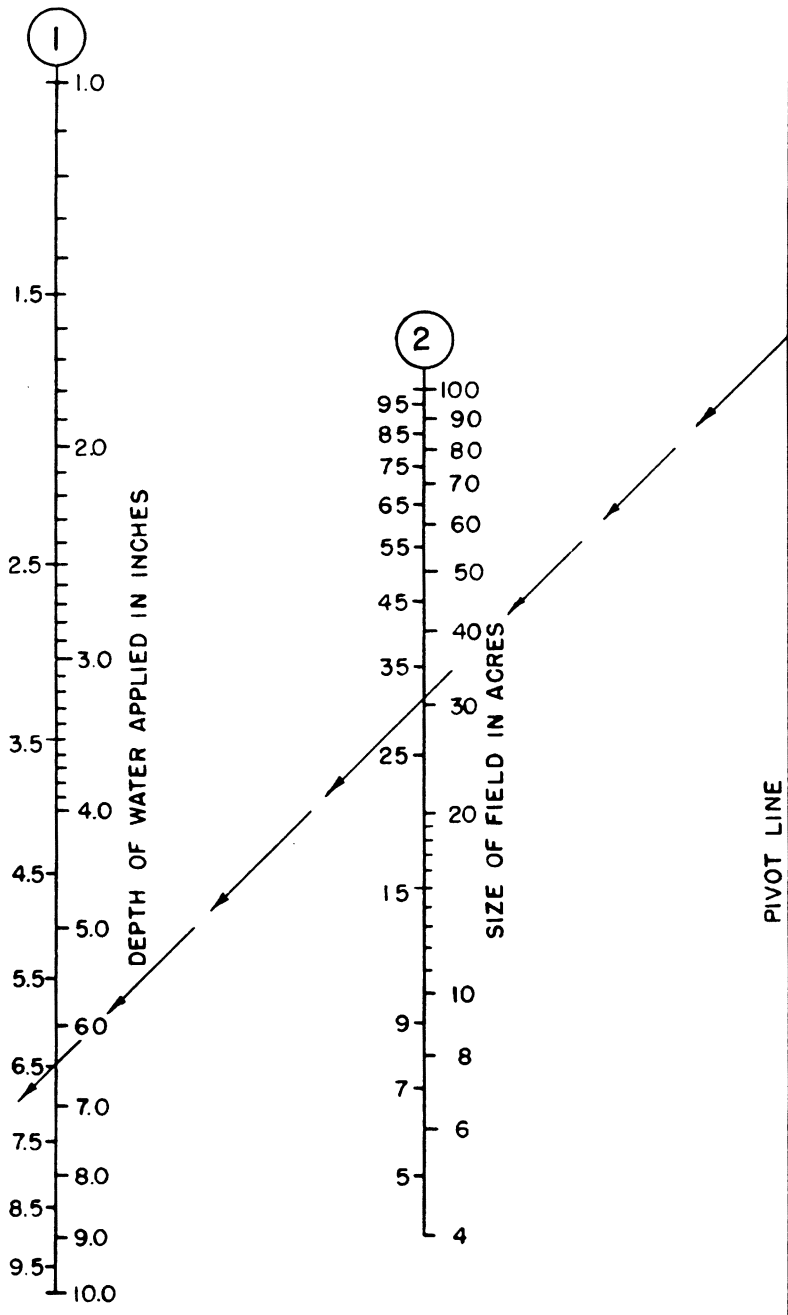
(Illustration is not nomograph on Page 4.)

OKLAHOMA AGRICULTURAL EXPERIMENT STATION

Oklahoma A. & M. College, Stillwater

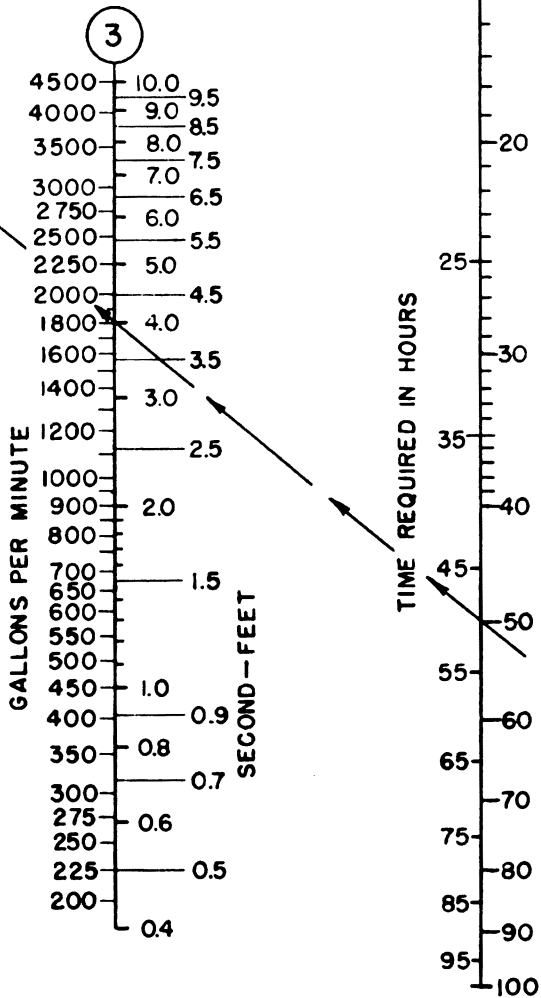
W. L. Blizzard, Director
Bulletin No. B-368

Louis E. Hawkins, Vice-Director
April, 1951



Nomograph For Finding

(Instructions to use nomograph on Page 4.)



Depth of Water Applied

A Graphic Method Of Finding The Depth Of Irrigation Water Applied

By JAMES E. GARTON
Assistant Agricultural Engineer
in Charge of Irrigation Research

An easy method of explaining how to compute the depth of irrigation water which has been applied is sometimes needed. This bulletin presents a nomograph developed by the author to meet that need.

The usual rule of thumb is that one cubic foot per second is equal to one acre-inch per hour. The general form of this equation as stated by Israelsen (1) is:

$$da = qt$$

where d = depth of water applied in inches
a = area of field in acres
q = cubic feet per second
t = time required in hours

However, this equation is sometimes difficult to explain when dealing in common values of inches, acres, hours, or cubic feet per second. The problem is further complicated when the rate of flow is in gallons per minute.

Seeking an easier method than was formerly available, the accompanying nomograph was developed. In the example shown, an irrigator finds that it takes 50 hours to irrigate a 31-acre field when he uses an irrigating stream of 4 second-feet, or about 1800 gallons, per minute. (If information on measuring water is desired, see reference 2.) He puts one end of his straight-edge on 50 hours (scale 4) and marks through 4.0 second-feet (scale 3) until he reaches the pivot line. From this point on the pivot line he marks through 31 acres (scale 2) and where this line crosses scale 1 is his answer in the number of inches of water applied to the field. In the example shown, he is putting on an average depth of 6½ inches.

The right amount of water to apply will be determined by the depth and texture of the soil and by the crops being grown.

If it is felt that too much water is being applied, the amount can be reduced by cutting down on the length of the rows or borders. Another method by which the depth applied can be reduced is to use a slightly larger stream in each furrow or border. This slightly larger stream gets the water over the land faster. There is one danger which should be remembered; if too large a stream is used, serious soil erosion will result.

LITERATURE CITED

- (1) Israelsen, O. W., Irrigation Principles and Practices. 2nd Edition, John Wiley and Sons. 1950.
- (2) Parshall, R. L., Measuring Water in Irrigation Channels, U.S.D.A. Farmer's Bulletin No. 1683. 1941.