STUDIES of the relative value of localized and broadcast methods of fertilizer application, particularly with row crops, have assumed increasing importance within the last 10 years. Experimental data (4, 5, 6), reported from the eastern part of the United States under summer rainfall conditions, have shown that localized applications are generally more efficient than broadcast applications, but that certain localized placements are definitely unsatisfactory.

Farmers in the Yakima Valley of Washington who have tried localized fertilizer applications on irrigated crops have often obtained serious decreases in stand and yield due to improper placement. Consequently, this study was undertaken to determine the best methods of application with row crops and to indicate the value of proper placement when irrigation water might move the greater portion of the fertilizer.

PLAN OF EXPERIMENT

The experimental work was divided into two parts. The first part dealt with the application of nitrogen, phosphorus, and potassium fertilizers in a localized band in the soil, followed by 12- and 24-hour applications of irrigation water with subsequent sampling, analysis, and determination of the fertilizer movement in the soil.

The second part dealt with the localized application of various amounts of nitrogen and phosphorus fertilizers at different distances to the side, under, and over the seed of corn and beans. Potassium was not included because previous experimental data (7, 9) obtained on this soil type have shown little or no significant crop response to this element with either corn or legumes.

FERTILIZER MOVEMENT UNDER IRRIGATION APPLICATION AND IRRIGATION

A uniformly sloping field of Sagemoor fine sandy loam was selected for this study. During the previous year the field was fallow and received no irrigation. Prior to that time the field had been in pasture rotation experiments and had not been fertilized.

A fertilizer mixture containing sodium nitrate (15.5% N), treble superphosphate (42% P₂O₅), and muriate of potash (50% K₂O) was placed in a band 1 rod...