INFLUENCE OF BORDER ROWS IN VARIETY TESTS
OF SMALL GRAINS

H. W. HULBERT AND J. D. REMSBERG

INTRODUCTION

It is commonly recognized by agronomists that border rows of experimental plats and competition between varieties are sources of considerable error. The effect of border rows is particularly noticeable in the semi-arid and non-irrigated areas of the West where soil moisture is usually the limiting factor in crop production. A great majority of the previous investigations upon this problem have been conducted in the more humid sections of the United States and the resulting recommendations are not entirely applicable to western conditions.

Barber (1) found that rows bordering pathways produced more grain and straw and were later in maturity than interior rows. He assumed that an area 6 inches wide around the plat received benefit from the cultivated pathways. Stadler (3) and Kiesselbach (4, 5) found that competition between dissimilar crops for moisture, nutrients, and possibly light resulted in error in crop tests. Cole and Hallstead (2), investigating with kafir and milo, obtained very marked increase in yield from the outside rows. The excess yield of grain was roughly proportionate to the increased available soil area.

The work reported in this paper was designed to furnish more definite information concerning the reduction of error in experimental work due to border effect.

EXPERIMENTAL METHODS

Investigations were conducted on variety tests of winter and spring wheat, barley, and oats, and on rate and date of seeding trials of winter and spring wheat.

The plats used were 7 feet in width and 155.56 feet in length, or one-fourtieth of an acre in area. An alley 2 feet in width separated each plat. The plats were arranged side by side in series according to each cereal group. The alleys between the plats and the roadways at either end were cultivated twice during the growing season to prevent weed growth. A 7-foot 14-row Superior drill, which had been calibrated and found to deliver very uniform quantities of seed in each row, was used in seeding the plats. The actual delivery in