INTRODUCTION

The extent of natural crossing resulting when different crop varieties are grown on adjacent plots is of prime interest. It has long been recognized that when strains of corn, the sorghums, or rye are grown in close proximity, natural crossing usually takes place freely. Formerly it was believed that natural crossing rarely occurred among the so-called close-fertilized cereals, wheat, oats, and barley. However, evidence to the contrary has accumulated, which indicates that this belief was not well founded. Numerous reports of the occurrence of natural crosses in varieties of close-fertilized cereals have been published and it is now generally recognized that some crossing may result when different strains of these cereals are grown close to each other.

It generally has been thought that climatic conditions, as well as certain physiological phenomena, influence the extent of natural crossing occurring in them, but apparently this belief is not based on experimental evidence. Few systematic experiments ever have been conducted with the idea of determining the extent of natural crossing in cereal crops, and, as far as is known to the writers, none has been conducted to determine the relative extent of crossing under different climatic conditions.

REVIEW OF LITERATURE

No published data have been available from experiments conducted systematically to determine the extent of natural crossing of oats in America. A review of the literature on the subject shows that the opinions of different authors have varied as to the extent of such crossing. Although it was formerly believed by most authors to be infrequent or of rare occurrence, occasional reports describing supposed natural crosses or field hybrids in oats have been published.

Rimpau (19) recorded a natural cross between black and white oats in 1880 and observed that the progeny of the hybrid plant grown in 1881 contained white and black kernels in a series representing various shades of brown. This was the only known case of natural cross-